7.2 .Netty 初认识 -- 编解码 -protobuf 序列化

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原文链接：https://ld246.com/article/1583217842269
来源网站：链滴

先安装protobuf

编写 SubscribeReq.proto

```
package netty;
option java_package = "club.wujingjian.com.wujingjian.netty.serial.java.vo2";
option java_outer_classname = "SubscribeReqProto";

message SubscribeReq {
required int32 subReqID = 1;;
required string userName = 2;
required string productName = 3;
required string address = 4;
}
```

编写: SubscribeResp.proto

```
package netty;
option java_package = "club.wujingjian.com.wujingjian.netty.serial.java.vo2";
option java_outer_classname = "SubscribeRespProto";

message SubscribeResp {
required int32 subReqID = 1;;
required int32 respCode = 2;
required string desc = 3;
}
```

调用protoc 命令将.proto文件生成对应的Java类

protoc --java_out=. SubscribeReq.proto

protoc --java_out=. SubscribeResp.proto

```
// Generated by the protocol buffer compiler.  DO NOT EDIT!
// source: SubscribeReq.proto

package club.wujingjian.com.wujingjian.netty.serial.protobuf.vo2;

public final class SubscribeReqProto {
  private SubscribeReqProto() {}
  public static void registerAllExtensions(
      com.google.protobuf.ExtensionRegistryLite registry) {
  }

  public static void registerAllExtensions(
      com.google.protobuf.ExtensionRegistry registry) {
    registerAllExtensions(
        (com.google.protobuf.ExtensionRegistryLite) registry);
  }
```

```
public interface SubscribeReqOrBuilder extends
    // @@protoc_insertion_point(interface_extends:netty.SubscribeReq)
    com.google.protobuf.MessageOrBuilder {

  /**
   * <code>required int32 subReqID = 1;</code>
   * @return Whether the subReqID field is set.
   */
  boolean hasSubReqID();
  /**
   * <code>required int32 subReqID = 1;</code>
   * @return The subReqID.
   */
  int getSubReqID();

  /**
   * <code>required string userName = 2;</code>
   * @return Whether the userName field is set.
   */
  boolean hasUserName();
  /**
   * <code>required string userName = 2;</code>
   * @return The userName.
   */
  String getUserName();
  /**
   * <code>required string userName = 2;</code>
   * @return The bytes for userName.
   */
  com.google.protobuf.ByteString
      getUserNameBytes();

  /**
   * <code>required string productName = 3;</code>
   * @return Whether the productName field is set.
   */
  boolean hasProductName();
  /**
   * <code>required string productName = 3;</code>
   * @return The productName.
   */
  String getProductName();
  /**
   * <code>required string productName = 3;</code>
   * @return The bytes for productName.
   */
  com.google.protobuf.ByteString
      getProductNameBytes();

  /**
   * <code>required string address = 4;</code>
   * @return Whether the address field is set.
   */
  boolean hasAddress();
```

```
  /**
   * <code>required string address = 4;</code>
   * @return The address.
   */
  String getAddress();
  /**
   * <code>required string address = 4;</code>
   * @return The bytes for address.
   */
  com.google.protobuf.ByteString
      getAddressBytes();
}
/**
 * Protobuf type {@code netty.SubscribeReq}
 */
public  static final class SubscribeReq extends
    com.google.protobuf.GeneratedMessageV3 implements
    // @@protoc_insertion_point(message_implements:netty.SubscribeReq)
    SubscribeReqOrBuilder {
private static final long serialVersionUID = 0L;
  // Use SubscribeReq.newBuilder() to construct.
  private SubscribeReq(com.google.protobuf.GeneratedMessageV3.Builder<?> builder) {
    super(builder);
  }
  private SubscribeReq() {
    userName_ = "";
    productName_ = "";
    address_ = "";
  }

  @Override
  @SuppressWarnings({"unused"})
  protected Object newInstance(
      UnusedPrivateParameter unused) {
    return new SubscribeReq();
  }

  @Override
  public final com.google.protobuf.UnknownFieldSet
  getUnknownFields() {
    return this.unknownFields;
  }
  private SubscribeReq(
      com.google.protobuf.CodedInputStream input,
      com.google.protobuf.ExtensionRegistryLite extensionRegistry)
      throws com.google.protobuf.InvalidProtocolBufferException {
    this();
    if (extensionRegistry == null) {
      throw new NullPointerException();
    }
    int mutable_bitField0_ = 0;
    com.google.protobuf.UnknownFieldSet.Builder unknownFields =
        com.google.protobuf.UnknownFieldSet.newBuilder();
    try {
```

```
    boolean done = false;
    while (!done) {
      int tag = input.readTag();
      switch (tag) {
        case 0:
          done = true;
          break;
        case 8: {
          bitField0_ |= 0x00000001;
          subReqID_ = input.readInt32();
          break;
        }
        case 18: {
          com.google.protobuf.ByteString bs = input.readBytes();
          bitField0_ |= 0x00000002;
          userName_ = bs;
          break;
        }
        case 26: {
          com.google.protobuf.ByteString bs = input.readBytes();
          bitField0_ |= 0x00000004;
          productName_ = bs;
          break;
        }
        case 34: {
          com.google.protobuf.ByteString bs = input.readBytes();
          bitField0_ |= 0x00000008;
          address_ = bs;
          break;
        }
        default: {
          if (!parseUnknownField(
              input, unknownFields, extensionRegistry, tag)) {
            done = true;
          }
          break;
        }
      }
    }
  } catch (com.google.protobuf.InvalidProtocolBufferException e) {
    throw e.setUnfinishedMessage(this);
  } catch (java.io.IOException e) {
    throw new com.google.protobuf.InvalidProtocolBufferException(
        e).setUnfinishedMessage(this);
  } finally {
    this.unknownFields = unknownFields.build();
    makeExtensionsImmutable();
  }
}
public static final com.google.protobuf.Descriptors.Descriptor
    getDescriptor() {
  return SubscribeReqProto.internal_static_netty_SubscribeReq_descriptor;
}
```

```
@Override
protected com.google.protobuf.GeneratedMessageV3.FieldAccessorTable
    internalGetFieldAccessorTable() {
  return SubscribeReqProto.internal_static_netty_SubscribeReq_fieldAccessorTable
      .ensureFieldAccessorsInitialized(
          SubscribeReq.class, Builder.class);
}

private int bitField0_;
public static final int SUBREQID_FIELD_NUMBER = 1;
private int subReqID_;
/**
 * <code>required int32 subReqID = 1;</code>
 * @return Whether the subReqID field is set.
 */
public boolean hasSubReqID() {
  return ((bitField0_ & 0x00000001) != 0);
}
/**
 * <code>required int32 subReqID = 1;</code>
 * @return The subReqID.
 */
public int getSubReqID() {
  return subReqID_;
}

public static final int USERNAME_FIELD_NUMBER = 2;
private volatile Object userName_;
/**
 * <code>required string userName = 2;</code>
 * @return Whether the userName field is set.
 */
public boolean hasUserName() {
  return ((bitField0_ & 0x00000002) != 0);
}
/**
 * <code>required string userName = 2;</code>
 * @return The userName.
 */
public String getUserName() {
  Object ref = userName_;
  if (ref instanceof String) {
    return (String) ref;
  } else {
    com.google.protobuf.ByteString bs =
        (com.google.protobuf.ByteString) ref;
    String s = bs.toStringUtf8();
    if (bs.isValidUtf8()) {
      userName_ = s;
    }
    return s;
  }
}
/**
```

```
 * <code>required string userName = 2;</code>
 * @return The bytes for userName.
 */
public com.google.protobuf.ByteString
    getUserNameBytes() {
  Object ref = userName_;
  if (ref instanceof String) {
    com.google.protobuf.ByteString b =
        com.google.protobuf.ByteString.copyFromUtf8(
            (String) ref);
    userName_ = b;
    return b;
  } else {
    return (com.google.protobuf.ByteString) ref;
  }
}

public static final int PRODUCTNAME_FIELD_NUMBER = 3;
private volatile Object productName_;
/**
 * <code>required string productName = 3;</code>
 * @return Whether the productName field is set.
 */
public boolean hasProductName() {
  return ((bitField0_ & 0x00000004) != 0);
}
/**
 * <code>required string productName = 3;</code>
 * @return The productName.
 */
public String getProductName() {
  Object ref = productName_;
  if (ref instanceof String) {
    return (String) ref;
  } else {
    com.google.protobuf.ByteString bs =
        (com.google.protobuf.ByteString) ref;
    String s = bs.toStringUtf8();
    if (bs.isValidUtf8()) {
      productName_ = s;
    }
    return s;
  }
}
/**
 * <code>required string productName = 3;</code>
 * @return The bytes for productName.
 */
public com.google.protobuf.ByteString
    getProductNameBytes() {
  Object ref = productName_;
  if (ref instanceof String) {
    com.google.protobuf.ByteString b =
        com.google.protobuf.ByteString.copyFromUtf8(
```

```
            (String) ref);
    productName_ = b;
    return b;
  } else {
    return (com.google.protobuf.ByteString) ref;
  }
}

public static final int ADDRESS_FIELD_NUMBER = 4;
private volatile Object address_;
/**
 * <code>required string address = 4;</code>
 * @return Whether the address field is set.
 */
public boolean hasAddress() {
  return ((bitField0_ & 0x00000008) != 0);
}
/**
 * <code>required string address = 4;</code>
 * @return The address.
 */
public String getAddress() {
  Object ref = address_;
  if (ref instanceof String) {
    return (String) ref;
  } else {
    com.google.protobuf.ByteString bs =
        (com.google.protobuf.ByteString) ref;
    String s = bs.toStringUtf8();
    if (bs.isValidUtf8()) {
      address_ = s;
    }
    return s;
  }
}
/**
 * <code>required string address = 4;</code>
 * @return The bytes for address.
 */
public com.google.protobuf.ByteString
    getAddressBytes() {
  Object ref = address_;
  if (ref instanceof String) {
    com.google.protobuf.ByteString b =
        com.google.protobuf.ByteString.copyFromUtf8(
            (String) ref);
    address_ = b;
    return b;
  } else {
    return (com.google.protobuf.ByteString) ref;
  }
}

private byte memoizedIsInitialized = -1;
```

```
@Override
public final boolean isInitialized() {
  byte isInitialized = memoizedIsInitialized;
  if (isInitialized == 1) return true;
  if (isInitialized == 0) return false;

  if (!hasSubReqID()) {
    memoizedIsInitialized = 0;
    return false;
  }
  if (!hasUserName()) {
    memoizedIsInitialized = 0;
    return false;
  }
  if (!hasProductName()) {
    memoizedIsInitialized = 0;
    return false;
  }
  if (!hasAddress()) {
    memoizedIsInitialized = 0;
    return false;
  }
  memoizedIsInitialized = 1;
  return true;
}

@Override
public void writeTo(com.google.protobuf.CodedOutputStream output)
                    throws java.io.IOException {
  if (((bitField0_ & 0x00000001) != 0)) {
    output.writeInt32(1, subReqID_);
  }
  if (((bitField0_ & 0x00000002) != 0)) {
    com.google.protobuf.GeneratedMessageV3.writeString(output, 2, userName_);
  }
  if (((bitField0_ & 0x00000004) != 0)) {
    com.google.protobuf.GeneratedMessageV3.writeString(output, 3, productName_);
  }
  if (((bitField0_ & 0x00000008) != 0)) {
    com.google.protobuf.GeneratedMessageV3.writeString(output, 4, address_);
  }
  unknownFields.writeTo(output);
}

@Override
public int getSerializedSize() {
  int size = memoizedSize;
  if (size != -1) return size;

  size = 0;
  if (((bitField0_ & 0x00000001) != 0)) {
    size += com.google.protobuf.CodedOutputStream
      .computeInt32Size(1, subReqID_);
  }
```

```
    if (((bitField0_ & 0x00000002) != 0)) {
      size += com.google.protobuf.GeneratedMessageV3.computeStringSize(2, userName_);
    }
    if (((bitField0_ & 0x00000004) != 0)) {
      size += com.google.protobuf.GeneratedMessageV3.computeStringSize(3, productName_
;
    }
    if (((bitField0_ & 0x00000008) != 0)) {
      size += com.google.protobuf.GeneratedMessageV3.computeStringSize(4, address_);
    }
    size += unknownFields.getSerializedSize();
    memoizedSize = size;
    return size;
  }

  @Override
  public boolean equals(final Object obj) {
    if (obj == this) {
     return true;
    }
    if (!(obj instanceof SubscribeReq)) {
      return super.equals(obj);
    }
    SubscribeReq other = (SubscribeReq) obj;

    if (hasSubReqID() != other.hasSubReqID()) return false;
    if (hasSubReqID()) {
      if (getSubReqID()
          != other.getSubReqID()) return false;
    }
    if (hasUserName() != other.hasUserName()) return false;
    if (hasUserName()) {
      if (!getUserName()
          .equals(other.getUserName())) return false;
    }
    if (hasProductName() != other.hasProductName()) return false;
    if (hasProductName()) {
      if (!getProductName()
          .equals(other.getProductName())) return false;
    }
    if (hasAddress() != other.hasAddress()) return false;
    if (hasAddress()) {
      if (!getAddress()
          .equals(other.getAddress())) return false;
    }
    if (!unknownFields.equals(other.unknownFields)) return false;
    return true;
  }

  @Override
  public int hashCode() {
    if (memoizedHashCode != 0) {
      return memoizedHashCode;
    }
```

```
  int hash = 41;
  hash = (19 * hash) + getDescriptor().hashCode();
  if (hasSubReqID()) {
    hash = (37 * hash) + SUBREQID_FIELD_NUMBER;
    hash = (53 * hash) + getSubReqID();
  }
  if (hasUserName()) {
    hash = (37 * hash) + USERNAME_FIELD_NUMBER;
    hash = (53 * hash) + getUserName().hashCode();
  }
  if (hasProductName()) {
    hash = (37 * hash) + PRODUCTNAME_FIELD_NUMBER;
    hash = (53 * hash) + getProductName().hashCode();
  }
  if (hasAddress()) {
    hash = (37 * hash) + ADDRESS_FIELD_NUMBER;
    hash = (53 * hash) + getAddress().hashCode();
  }
  hash = (29 * hash) + unknownFields.hashCode();
  memoizedHashCode = hash;
  return hash;
}

public static SubscribeReq parseFrom(
    java.nio.ByteBuffer data)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data);
}
public static SubscribeReq parseFrom(
    java.nio.ByteBuffer data,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data, extensionRegistry);
}
public static SubscribeReq parseFrom(
    com.google.protobuf.ByteString data)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data);
}
public static SubscribeReq parseFrom(
    com.google.protobuf.ByteString data,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data, extensionRegistry);
}
public static SubscribeReq parseFrom(byte[] data)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data);
}
public static SubscribeReq parseFrom(
    byte[] data,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data, extensionRegistry);
```

```
}
public static SubscribeReq parseFrom(java.io.InputStream input)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseWithIOException(PARSER, input);
}
public static SubscribeReq parseFrom(
    java.io.InputStream input,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseWithIOException(PARSER, input, extensionRegistry);
}
public static SubscribeReq parseDelimitedFrom(java.io.InputStream input)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseDelimitedWithIOException(PARSER, input);
}
public static SubscribeReq parseDelimitedFrom(
    java.io.InputStream input,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseDelimitedWithIOException(PARSER, input, extensionRegistry);
}
public static SubscribeReq parseFrom(
    com.google.protobuf.CodedInputStream input)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseWithIOException(PARSER, input);
}
public static SubscribeReq parseFrom(
    com.google.protobuf.CodedInputStream input,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseWithIOException(PARSER, input, extensionRegistry);
}

@Override
public Builder newBuilderForType() { return newBuilder(); }
public static Builder newBuilder() {
  return DEFAULT_INSTANCE.toBuilder();
}
public static Builder newBuilder(SubscribeReq prototype) {
  return DEFAULT_INSTANCE.toBuilder().mergeFrom(prototype);
}
@Override
public Builder toBuilder() {
  return this == DEFAULT_INSTANCE
      ? new Builder() : new Builder().mergeFrom(this);
}

@Override
```

```
  protected Builder newBuilderForType(
      com.google.protobuf.GeneratedMessageV3.BuilderParent parent) {
    Builder builder = new Builder(parent);
    return builder;
  }
  /**
   * Protobuf type {@code netty.SubscribeReq}
   */
  public static final class Builder extends
      com.google.protobuf.GeneratedMessageV3.Builder<Builder> implements
      // @@protoc_insertion_point(builder_implements:netty.SubscribeReq)
      SubscribeReqOrBuilder {
    public static final com.google.protobuf.Descriptors.Descriptor
        getDescriptor() {
      return SubscribeReqProto.internal_static_netty_SubscribeReq_descriptor;
    }

    @Override
    protected com.google.protobuf.GeneratedMessageV3.FieldAccessorTable
        internalGetFieldAccessorTable() {
      return SubscribeReqProto.internal_static_netty_SubscribeReq_fieldAccessorTable
          .ensureFieldAccessorsInitialized(
              SubscribeReq.class, Builder.class);
    }

    // Construct using club.wujingjian.com.wujingjian.netty.serial.java.vo2.SubscribeReqProto.
ubscribeReq.newBuilder()
    private Builder() {
      maybeForceBuilderInitialization();
    }

    private Builder(
        com.google.protobuf.GeneratedMessageV3.BuilderParent parent) {
      super(parent);
      maybeForceBuilderInitialization();
    }
    private void maybeForceBuilderInitialization() {
      if (com.google.protobuf.GeneratedMessageV3
              .alwaysUseFieldBuilders) {
      }
    }
    @Override
    public Builder clear() {
      super.clear();
      subReqID_ = 0;
      bitField0_ = (bitField0_ & ~0x00000001);
      userName_ = "";
      bitField0_ = (bitField0_ & ~0x00000002);
      productName_ = "";
      bitField0_ = (bitField0_ & ~0x00000004);
      address_ = "";
      bitField0_ = (bitField0_ & ~0x00000008);
      return this;
    }
```

```
@Override
public com.google.protobuf.Descriptors.Descriptor
    getDescriptorForType() {
  return SubscribeReqProto.internal_static_netty_SubscribeReq_descriptor;
}

@Override
public SubscribeReq getDefaultInstanceForType() {
  return SubscribeReq.getDefaultInstance();
}

@Override
public SubscribeReq build() {
  SubscribeReq result = buildPartial();
  if (!result.isInitialized()) {
    throw newUninitializedMessageException(result);
  }
  return result;
}

@Override
public SubscribeReq buildPartial() {
  SubscribeReq result = new SubscribeReq(this);
  int from_bitField0_ = bitField0_;
  int to_bitField0_ = 0;
  if (((from_bitField0_ & 0x00000001) != 0)) {
    result.subReqID_ = subReqID_;
    to_bitField0_ |= 0x00000001;
  }
  if (((from_bitField0_ & 0x00000002) != 0)) {
    to_bitField0_ |= 0x00000002;
  }
  result.userName_ = userName_;
  if (((from_bitField0_ & 0x00000004) != 0)) {
    to_bitField0_ |= 0x00000004;
  }
  result.productName_ = productName_;
  if (((from_bitField0_ & 0x00000008) != 0)) {
    to_bitField0_ |= 0x00000008;
  }
  result.address_ = address_;
  result.bitField0_ = to_bitField0_;
  onBuilt();
  return result;
}

@Override
public Builder clone() {
  return super.clone();
}
@Override
public Builder setField(
    com.google.protobuf.Descriptors.FieldDescriptor field,
```

```
    Object value) {
  return super.setField(field, value);
}
@Override
public Builder clearField(
    com.google.protobuf.Descriptors.FieldDescriptor field) {
  return super.clearField(field);
}
@Override
public Builder clearOneof(
    com.google.protobuf.Descriptors.OneofDescriptor oneof) {
  return super.clearOneof(oneof);
}
@Override
public Builder setRepeatedField(
    com.google.protobuf.Descriptors.FieldDescriptor field,
    int index, Object value) {
  return super.setRepeatedField(field, index, value);
}
@Override
public Builder addRepeatedField(
    com.google.protobuf.Descriptors.FieldDescriptor field,
    Object value) {
  return super.addRepeatedField(field, value);
}
@Override
public Builder mergeFrom(com.google.protobuf.Message other) {
  if (other instanceof SubscribeReq) {
    return mergeFrom((SubscribeReq)other);
  } else {
    super.mergeFrom(other);
    return this;
  }
}

public Builder mergeFrom(SubscribeReq other) {
  if (other == SubscribeReq.getDefaultInstance()) return this;
  if (other.hasSubReqID()) {
    setSubReqID(other.getSubReqID());
  }
  if (other.hasUserName()) {
    bitField0_ |= 0x00000002;
    userName_ = other.userName_;
    onChanged();
  }
  if (other.hasProductName()) {
    bitField0_ |= 0x00000004;
    productName_ = other.productName_;
    onChanged();
  }
  if (other.hasAddress()) {
    bitField0_ |= 0x00000008;
    address_ = other.address_;
    onChanged();
```

```
  }
  this.mergeUnknownFields(other.unknownFields);
  onChanged();
  return this;
}

@Override
public final boolean isInitialized() {
  if (!hasSubReqID()) {
    return false;
  }
  if (!hasUserName()) {
    return false;
  }
  if (!hasProductName()) {
    return false;
  }
  if (!hasAddress()) {
    return false;
  }
  return true;
}

@Override
public Builder mergeFrom(
    com.google.protobuf.CodedInputStream input,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws java.io.IOException {
  SubscribeReq parsedMessage = null;
  try {
    parsedMessage = PARSER.parsePartialFrom(input, extensionRegistry);
  } catch (com.google.protobuf.InvalidProtocolBufferException e) {
    parsedMessage = (SubscribeReq) e.getUnfinishedMessage();
    throw e.unwrapIOException();
  } finally {
    if (parsedMessage != null) {
      mergeFrom(parsedMessage);
    }
  }
  return this;
}
private int bitField0_;

private int subReqID_ ;
/**
 * <code>required int32 subReqID = 1;</code>
 * @return Whether the subReqID field is set.
 */
public boolean hasSubReqID() {
  return ((bitField0_ & 0x00000001) != 0);
}
/**
 * <code>required int32 subReqID = 1;</code>
 * @return The subReqID.
```

```
 */
public int getSubReqID() {
  return subReqID_;
}
/**
 * <code>required int32 subReqID = 1;</code>
 * @param value The subReqID to set.
 * @return This builder for chaining.
 */
public Builder setSubReqID(int value) {
  bitField0_ |= 0x00000001;
  subReqID_ = value;
  onChanged();
  return this;
}
/**
 * <code>required int32 subReqID = 1;</code>
 * @return This builder for chaining.
 */
public Builder clearSubReqID() {
  bitField0_ = (bitField0_ & ~0x00000001);
  subReqID_ = 0;
  onChanged();
  return this;
}

private Object userName_ = "";
/**
 * <code>required string userName = 2;</code>
 * @return Whether the userName field is set.
 */
public boolean hasUserName() {
  return ((bitField0_ & 0x00000002) != 0);
}
/**
 * <code>required string userName = 2;</code>
 * @return The userName.
 */
public String getUserName() {
  Object ref = userName_;
  if (!(ref instanceof String)) {
    com.google.protobuf.ByteString bs =
        (com.google.protobuf.ByteString) ref;
    String s = bs.toStringUtf8();
    if (bs.isValidUtf8()) {
      userName_ = s;
    }
    return s;
  } else {
    return (String) ref;
  }
}
/**
 * <code>required string userName = 2;</code>
```

```
     * @return The bytes for userName.
     */
    public com.google.protobuf.ByteString
        getUserNameBytes() {
      Object ref = userName_;
      if (ref instanceof String) {
        com.google.protobuf.ByteString b =
            com.google.protobuf.ByteString.copyFromUtf8(
                (String) ref);
        userName_ = b;
        return b;
      } else {
        return (com.google.protobuf.ByteString) ref;
      }
    }
    /**
     * <code>required string userName = 2;</code>
     * @param value The userName to set.
     * @return This builder for chaining.
     */
    public Builder setUserName(
        String value) {
      if (value == null) {
  throw new NullPointerException();
}
bitField0_ |= 0x00000002;
      userName_ = value;
      onChanged();
      return this;
    }
    /**
     * <code>required string userName = 2;</code>
     * @return This builder for chaining.
     */
    public Builder clearUserName() {
      bitField0_ = (bitField0_ & ~0x00000002);
      userName_ = getDefaultInstance().getUserName();
      onChanged();
      return this;
    }
    /**
     * <code>required string userName = 2;</code>
     * @param value The bytes for userName to set.
     * @return This builder for chaining.
     */
    public Builder setUserNameBytes(
        com.google.protobuf.ByteString value) {
      if (value == null) {
  throw new NullPointerException();
}
bitField0_ |= 0x00000002;
      userName_ = value;
      onChanged();
      return this;
```

```
  }

  private Object productName_ = "";
  /**
   * <code>required string productName = 3;</code>
   * @return Whether the productName field is set.
   */
  public boolean hasProductName() {
    return ((bitField0_ & 0x00000004) != 0);
  }
  /**
   * <code>required string productName = 3;</code>
   * @return The productName.
   */
  public String getProductName() {
    Object ref = productName_;
    if (!(ref instanceof String)) {
      com.google.protobuf.ByteString bs =
          (com.google.protobuf.ByteString) ref;
      String s = bs.toStringUtf8();
      if (bs.isValidUtf8()) {
        productName_ = s;
      }
      return s;
    } else {
      return (String) ref;
    }
  }
  /**
   * <code>required string productName = 3;</code>
   * @return The bytes for productName.
   */
  public com.google.protobuf.ByteString
      getProductNameBytes() {
    Object ref = productName_;
    if (ref instanceof String) {
      com.google.protobuf.ByteString b =
          com.google.protobuf.ByteString.copyFromUtf8(
              (String) ref);
      productName_ = b;
      return b;
    } else {
      return (com.google.protobuf.ByteString) ref;
    }
  }
  /**
   * <code>required string productName = 3;</code>
   * @param value The productName to set.
   * @return This builder for chaining.
   */
  public Builder setProductName(
      String value) {
    if (value == null) {
throw new NullPointerException();
```

```
}
bitField0_ |= 0x00000004;
      productName_ = value;
      onChanged();
      return this;
    }
    /**
     * <code>required string productName = 3;</code>
     * @return This builder for chaining.
     */
    public Builder clearProductName() {
      bitField0_ = (bitField0_ & ~0x00000004);
      productName_ = getDefaultInstance().getProductName();
      onChanged();
      return this;
    }
    /**
     * <code>required string productName = 3;</code>
     * @param value The bytes for productName to set.
     * @return This builder for chaining.
     */
    public Builder setProductNameBytes(
        com.google.protobuf.ByteString value) {
      if (value == null) {
  throw new NullPointerException();
}
bitField0_ |= 0x00000004;
      productName_ = value;
      onChanged();
      return this;
    }

    private Object address_ = "";
    /**
     * <code>required string address = 4;</code>
     * @return Whether the address field is set.
     */
    public boolean hasAddress() {
      return ((bitField0_ & 0x00000008) != 0);
    }
    /**
     * <code>required string address = 4;</code>
     * @return The address.
     */
    public String getAddress() {
      Object ref = address_;
      if (!(ref instanceof String)) {
        com.google.protobuf.ByteString bs =
            (com.google.protobuf.ByteString) ref;
        String s = bs.toStringUtf8();
        if (bs.isValidUtf8()) {
          address_ = s;
        }
        return s;
```

```
      } else {
        return (String) ref;
      }
    }
    /**
     * <code>required string address = 4;</code>
     * @return The bytes for address.
     */
    public com.google.protobuf.ByteString
        getAddressBytes() {
      Object ref = address_;
      if (ref instanceof String) {
        com.google.protobuf.ByteString b =
            com.google.protobuf.ByteString.copyFromUtf8(
                (String) ref);
        address_ = b;
        return b;
      } else {
        return (com.google.protobuf.ByteString) ref;
      }
    }
    /**
     * <code>required string address = 4;</code>
     * @param value The address to set.
     * @return This builder for chaining.
     */
    public Builder setAddress(
        String value) {
      if (value == null) {
  throw new NullPointerException();
}
bitField0_ |= 0x00000008;
      address_ = value;
      onChanged();
      return this;
    }
    /**
     * <code>required string address = 4;</code>
     * @return This builder for chaining.
     */
    public Builder clearAddress() {
      bitField0_ = (bitField0_ & ~0x00000008);
      address_ = getDefaultInstance().getAddress();
      onChanged();
      return this;
    }
    /**
     * <code>required string address = 4;</code>
     * @param value The bytes for address to set.
     * @return This builder for chaining.
     */
    public Builder setAddressBytes(
        com.google.protobuf.ByteString value) {
      if (value == null) {
```

```
  throw new NullPointerException();
}
bitField0_ |= 0x00000008;
      address_ = value;
      onChanged();
      return this;
    }
    @Override
    public final Builder setUnknownFields(
        final com.google.protobuf.UnknownFieldSet unknownFields) {
      return super.setUnknownFields(unknownFields);
    }

    @Override
    public final Builder mergeUnknownFields(
        final com.google.protobuf.UnknownFieldSet unknownFields) {
      return super.mergeUnknownFields(unknownFields);
    }


    // @@protoc_insertion_point(builder_scope:netty.SubscribeReq)
  }

  // @@protoc_insertion_point(class_scope:netty.SubscribeReq)
  private static final SubscribeReq DEFAULT_INSTANCE;
  static {
    DEFAULT_INSTANCE = new SubscribeReq();
  }

  public static SubscribeReq getDefaultInstance() {
    return DEFAULT_INSTANCE;
  }

  @Deprecated public static final com.google.protobuf.Parser<SubscribeReq>
      PARSER = new com.google.protobuf.AbstractParser<SubscribeReq>() {
    @Override
    public SubscribeReq parsePartialFrom(
        com.google.protobuf.CodedInputStream input,
        com.google.protobuf.ExtensionRegistryLite extensionRegistry)
        throws com.google.protobuf.InvalidProtocolBufferException {
      return new SubscribeReq(input, extensionRegistry);
    }
  };

  public static com.google.protobuf.Parser<SubscribeReq> parser() {
    return PARSER;
  }

  @Override
  public com.google.protobuf.Parser<SubscribeReq> getParserForType() {
    return PARSER;
  }

  @Override
```

```
    public SubscribeReq getDefaultInstanceForType() {
      return DEFAULT_INSTANCE;
    }

  }

  private static final com.google.protobuf.Descriptors.Descriptor
    internal_static_netty_SubscribeReq_descriptor;
  private static final
    com.google.protobuf.GeneratedMessageV3.FieldAccessorTable
      internal_static_netty_SubscribeReq_fieldAccessorTable;

  public static com.google.protobuf.Descriptors.FileDescriptor
      getDescriptor() {
    return descriptor;
  }
  private static  com.google.protobuf.Descriptors.FileDescriptor
      descriptor;
  static {
    String[] descriptorData = {
      "\n\022SubscribeReq.proto\022\005netty\"X\n\014Subscribe" +
      "Req\022\020\n\010subReqID\030\001 \002(\005\022\020\n\010userName\030\002 \002
\t\022" +
      "\023\n\013productName\030\003 \002(\t\022\017\n\007address\030\004 \002(\tBI\n" +
      "4club.wujingjian.com.wujingjian.netty.se" +
      "rial.java.vo2B\021SubscribeReqProto"
    };
    descriptor = com.google.protobuf.Descriptors.FileDescriptor
      .internalBuildGeneratedFileFrom(descriptorData,
        new com.google.protobuf.Descriptors.FileDescriptor[] {
        });
    internal_static_netty_SubscribeReq_descriptor =
      getDescriptor().getMessageTypes().get(0);
    internal_static_netty_SubscribeReq_fieldAccessorTable = new
      com.google.protobuf.GeneratedMessageV3.FieldAccessorTable(
        internal_static_netty_SubscribeReq_descriptor,
        new String[] { "SubReqID", "UserName", "ProductName", "Address", });
  }

  // @@protoc_insertion_point(outer_class_scope)
}


// Generated by the protocol buffer compiler.  DO NOT EDIT!
// source: SubscribeResp.proto

package club.wujingjian.com.wujingjian.netty.serial.protobuf.vo2;

public final class SubscribeRespProto {
  private SubscribeRespProto() {}
  public static void registerAllExtensions(
      com.google.protobuf.ExtensionRegistryLite registry) {
  }
```

```
public static void registerAllExtensions(
    com.google.protobuf.ExtensionRegistry registry) {
  registerAllExtensions(
      (com.google.protobuf.ExtensionRegistryLite) registry);
}
public interface SubscribeRespOrBuilder extends
    // @@protoc_insertion_point(interface_extends:netty.SubscribeResp)
    com.google.protobuf.MessageOrBuilder {

  /**
   * <code>required int32 subReqID = 1;</code>
   * @return Whether the subReqID field is set.
   */
  boolean hasSubReqID();
  /**
   * <code>required int32 subReqID = 1;</code>
   * @return The subReqID.
   */
  int getSubReqID();

  /**
   * <code>required int32 respCode = 2;</code>
   * @return Whether the respCode field is set.
   */
  boolean hasRespCode();
  /**
   * <code>required int32 respCode = 2;</code>
   * @return The respCode.
   */
  int getRespCode();

  /**
   * <code>required string desc = 3;</code>
   * @return Whether the desc field is set.
   */
  boolean hasDesc();
  /**
   * <code>required string desc = 3;</code>
   * @return The desc.
   */
  String getDesc();
  /**
   * <code>required string desc = 3;</code>
   * @return The bytes for desc.
   */
  com.google.protobuf.ByteString
      getDescBytes();
}
/**
 * Protobuf type {@code netty.SubscribeResp}
 */
public  static final class SubscribeResp extends
    com.google.protobuf.GeneratedMessageV3 implements
    // @@protoc_insertion_point(message_implements:netty.SubscribeResp)
```

```
    SubscribeRespOrBuilder {
private static final long serialVersionUID = 0L;
  // Use SubscribeResp.newBuilder() to construct.
  private SubscribeResp(com.google.protobuf.GeneratedMessageV3.Builder<?> builder) {
    super(builder);
  }
  private SubscribeResp() {
    desc_ = "";
  }

  @Override
  @SuppressWarnings({"unused"})
  protected Object newInstance(
      UnusedPrivateParameter unused) {
    return new SubscribeResp();
  }

  @Override
  public final com.google.protobuf.UnknownFieldSet
  getUnknownFields() {
    return this.unknownFields;
  }
  private SubscribeResp(
      com.google.protobuf.CodedInputStream input,
      com.google.protobuf.ExtensionRegistryLite extensionRegistry)
      throws com.google.protobuf.InvalidProtocolBufferException {
    this();
    if (extensionRegistry == null) {
      throw new NullPointerException();
    }
    int mutable_bitField0_ = 0;
    com.google.protobuf.UnknownFieldSet.Builder unknownFields =
        com.google.protobuf.UnknownFieldSet.newBuilder();
    try {
      boolean done = false;
      while (!done) {
        int tag = input.readTag();
        switch (tag) {
          case 0:
            done = true;
            break;
          case 8: {
            bitField0_ |= 0x00000001;
            subReqID_ = input.readInt32();
            break;
          }
          case 16: {
            bitField0_ |= 0x00000002;
            respCode_ = input.readInt32();
            break;
          }
          case 26: {
            com.google.protobuf.ByteString bs = input.readBytes();
            bitField0_ |= 0x00000004;
```

```
          desc_ = bs;
          break;
        }
        default: {
          if (!parseUnknownField(
              input, unknownFields, extensionRegistry, tag)) {
            done = true;
          }
          break;
        }
      }
    }
  } catch (com.google.protobuf.InvalidProtocolBufferException e) {
    throw e.setUnfinishedMessage(this);
  } catch (java.io.IOException e) {
    throw new com.google.protobuf.InvalidProtocolBufferException(
        e).setUnfinishedMessage(this);
  } finally {
    this.unknownFields = unknownFields.build();
    makeExtensionsImmutable();
  }
}
public static final com.google.protobuf.Descriptors.Descriptor
    getDescriptor() {
  return SubscribeRespProto.internal_static_netty_SubscribeResp_descriptor;
}

@Override
protected FieldAccessorTable
    internalGetFieldAccessorTable() {
  return SubscribeRespProto.internal_static_netty_SubscribeResp_fieldAccessorTable
      .ensureFieldAccessorsInitialized(
          SubscribeResp.class, Builder.class);
}

private int bitField0_;
public static final int SUBREQID_FIELD_NUMBER = 1;
private int subReqID_;
/**
 * <code>required int32 subReqID = 1;</code>
 * @return Whether the subReqID field is set.
 */
public boolean hasSubReqID() {
  return ((bitField0_ & 0x00000001) != 0);
}
/**
 * <code>required int32 subReqID = 1;</code>
 * @return The subReqID.
 */
public int getSubReqID() {
  return subReqID_;
}

public static final int RESPCODE_FIELD_NUMBER = 2;
```

```
private int respCode_;
/**
 * <code>required int32 respCode = 2;</code>
 * @return Whether the respCode field is set.
 */
public boolean hasRespCode() {
  return ((bitField0_ & 0x00000002) != 0);
}
/**
 * <code>required int32 respCode = 2;</code>
 * @return The respCode.
 */
public int getRespCode() {
  return respCode_;
}

public static final int DESC_FIELD_NUMBER = 3;
private volatile Object desc_;
/**
 * <code>required string desc = 3;</code>
 * @return Whether the desc field is set.
 */
public boolean hasDesc() {
  return ((bitField0_ & 0x00000004) != 0);
}
/**
 * <code>required string desc = 3;</code>
 * @return The desc.
 */
public String getDesc() {
  Object ref = desc_;
  if (ref instanceof String) {
    return (String) ref;
  } else {
    com.google.protobuf.ByteString bs =
        (com.google.protobuf.ByteString) ref;
    String s = bs.toStringUtf8();
    if (bs.isValidUtf8()) {
      desc_ = s;
    }
    return s;
  }
}
/**
 * <code>required string desc = 3;</code>
 * @return The bytes for desc.
 */
public com.google.protobuf.ByteString
    getDescBytes() {
  Object ref = desc_;
  if (ref instanceof String) {
    com.google.protobuf.ByteString b =
        com.google.protobuf.ByteString.copyFromUtf8(
            (String) ref);
```

```
    desc_ = b;
    return b;
  } else {
    return (com.google.protobuf.ByteString) ref;
  }
}

private byte memoizedIsInitialized = -1;
@Override
public final boolean isInitialized() {
  byte isInitialized = memoizedIsInitialized;
  if (isInitialized == 1) return true;
  if (isInitialized == 0) return false;

  if (!hasSubReqID()) {
    memoizedIsInitialized = 0;
    return false;
  }
  if (!hasRespCode()) {
    memoizedIsInitialized = 0;
    return false;
  }
  if (!hasDesc()) {
    memoizedIsInitialized = 0;
    return false;
  }
  memoizedIsInitialized = 1;
  return true;
}

@Override
public void writeTo(com.google.protobuf.CodedOutputStream output)
                    throws java.io.IOException {
  if (((bitField0_ & 0x00000001) != 0)) {
    output.writeInt32(1, subReqID_);
  }
  if (((bitField0_ & 0x00000002) != 0)) {
    output.writeInt32(2, respCode_);
  }
  if (((bitField0_ & 0x00000004) != 0)) {
    com.google.protobuf.GeneratedMessageV3.writeString(output, 3, desc_);
  }
  unknownFields.writeTo(output);
}

@Override
public int getSerializedSize() {
  int size = memoizedSize;
  if (size != -1) return size;

  size = 0;
  if (((bitField0_ & 0x00000001) != 0)) {
    size += com.google.protobuf.CodedOutputStream
      .computeInt32Size(1, subReqID_);
```

```
  }
  if (((bitField0_ & 0x00000002) != 0)) {
    size += com.google.protobuf.CodedOutputStream
      .computeInt32Size(2, respCode_);
  }
  if (((bitField0_ & 0x00000004) != 0)) {
    size += com.google.protobuf.GeneratedMessageV3.computeStringSize(3, desc_);
  }
  size += unknownFields.getSerializedSize();
  memoizedSize = size;
  return size;
}

@Override
public boolean equals(final Object obj) {
  if (obj == this) {
   return true;
  }
  if (!(obj instanceof SubscribeResp)) {
    return super.equals(obj);
  }
  SubscribeResp other = (SubscribeResp) obj;

  if (hasSubReqID() != other.hasSubReqID()) return false;
  if (hasSubReqID()) {
    if (getSubReqID()
        != other.getSubReqID()) return false;
  }
  if (hasRespCode() != other.hasRespCode()) return false;
  if (hasRespCode()) {
    if (getRespCode()
        != other.getRespCode()) return false;
  }
  if (hasDesc() != other.hasDesc()) return false;
  if (hasDesc()) {
    if (!getDesc()
        .equals(other.getDesc())) return false;
  }
  if (!unknownFields.equals(other.unknownFields)) return false;
  return true;
}

@Override
public int hashCode() {
  if (memoizedHashCode != 0) {
    return memoizedHashCode;
  }
  int hash = 41;
  hash = (19 * hash) + getDescriptor().hashCode();
  if (hasSubReqID()) {
    hash = (37 * hash) + SUBREQID_FIELD_NUMBER;
    hash = (53 * hash) + getSubReqID();
  }
  if (hasRespCode()) {
```

```
    hash = (37 * hash) + RESPCODE_FIELD_NUMBER;
    hash = (53 * hash) + getRespCode();
  }
  if (hasDesc()) {
    hash = (37 * hash) + DESC_FIELD_NUMBER;
    hash = (53 * hash) + getDesc().hashCode();
  }
  hash = (29 * hash) + unknownFields.hashCode();
  memoizedHashCode = hash;
  return hash;
}

public static SubscribeResp parseFrom(
    java.nio.ByteBuffer data)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data);
}
public static SubscribeResp parseFrom(
    java.nio.ByteBuffer data,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data, extensionRegistry);
}
public static SubscribeResp parseFrom(
    com.google.protobuf.ByteString data)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data);
}
public static SubscribeResp parseFrom(
    com.google.protobuf.ByteString data,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data, extensionRegistry);
}
public static SubscribeResp parseFrom(byte[] data)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data);
}
public static SubscribeResp parseFrom(
    byte[] data,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws com.google.protobuf.InvalidProtocolBufferException {
  return PARSER.parseFrom(data, extensionRegistry);
}
public static SubscribeResp parseFrom(java.io.InputStream input)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseWithIOException(PARSER, input);
}
public static SubscribeResp parseFrom(
    java.io.InputStream input,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
```

```
      .parseWithIOException(PARSER, input, extensionRegistry);
}
public static SubscribeResp parseDelimitedFrom(java.io.InputStream input)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseDelimitedWithIOException(PARSER, input);
}
public static SubscribeResp parseDelimitedFrom(
    java.io.InputStream input,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseDelimitedWithIOException(PARSER, input, extensionRegistry);
}
public static SubscribeResp parseFrom(
    com.google.protobuf.CodedInputStream input)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseWithIOException(PARSER, input);
}
public static SubscribeResp parseFrom(
    com.google.protobuf.CodedInputStream input,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
    throws java.io.IOException {
  return com.google.protobuf.GeneratedMessageV3
      .parseWithIOException(PARSER, input, extensionRegistry);
}

@Override
public Builder newBuilderForType() { return newBuilder(); }
public static Builder newBuilder() {
  return DEFAULT_INSTANCE.toBuilder();
}
public static Builder newBuilder(SubscribeResp prototype) {
  return DEFAULT_INSTANCE.toBuilder().mergeFrom(prototype);
}
@Override
public Builder toBuilder() {
  return this == DEFAULT_INSTANCE
      ? new Builder() : new Builder().mergeFrom(this);
}

@Override
protected Builder newBuilderForType(
    BuilderParent parent) {
  Builder builder = new Builder(parent);
  return builder;
}
/**
 * Protobuf type {@code netty.SubscribeResp}
 */
public static final class Builder extends
    com.google.protobuf.GeneratedMessageV3.Builder<Builder> implements
    // @@protoc_insertion_point(builder_implements:netty.SubscribeResp)
```

```
  SubscribeRespOrBuilder {
public static final com.google.protobuf.Descriptors.Descriptor
    getDescriptor() {
  return SubscribeRespProto.internal_static_netty_SubscribeResp_descriptor;
}

@Override
protected FieldAccessorTable
    internalGetFieldAccessorTable() {
  return SubscribeRespProto.internal_static_netty_SubscribeResp_fieldAccessorTable
      .ensureFieldAccessorsInitialized(
          SubscribeResp.class, Builder.class);
}

// Construct using club.wujingjian.com.wujingjian.netty.serial.java.vo2.SubscribeRespProto
SubscribeResp.newBuilder()
private Builder() {
  maybeForceBuilderInitialization();
}

private Builder(
    BuilderParent parent) {
  super(parent);
  maybeForceBuilderInitialization();
}
private void maybeForceBuilderInitialization() {
  if (com.google.protobuf.GeneratedMessageV3
          .alwaysUseFieldBuilders) {
  }
}
@Override
public Builder clear() {
  super.clear();
  subReqID_ = 0;
  bitField0_ = (bitField0_ & ~0x00000001);
  respCode_ = 0;
  bitField0_ = (bitField0_ & ~0x00000002);
  desc_ = "";
  bitField0_ = (bitField0_ & ~0x00000004);
  return this;
}

@Override
public com.google.protobuf.Descriptors.Descriptor
    getDescriptorForType() {
  return SubscribeRespProto.internal_static_netty_SubscribeResp_descriptor;
}

@Override
public SubscribeResp getDefaultInstanceForType() {
  return SubscribeResp.getDefaultInstance();
}

@Override
```

```
public SubscribeResp build() {
  SubscribeResp result = buildPartial();
  if (!result.isInitialized()) {
    throw newUninitializedMessageException(result);
  }
  return result;
}

@Override
public SubscribeResp buildPartial() {
  SubscribeResp result = new SubscribeResp(this);
  int from_bitField0_ = bitField0_;
  int to_bitField0_ = 0;
  if (((from_bitField0_ & 0x00000001) != 0)) {
    result.subReqID_ = subReqID_;
    to_bitField0_ |= 0x00000001;
  }
  if (((from_bitField0_ & 0x00000002) != 0)) {
    result.respCode_ = respCode_;
    to_bitField0_ |= 0x00000002;
  }
  if (((from_bitField0_ & 0x00000004) != 0)) {
    to_bitField0_ |= 0x00000004;
  }
  result.desc_ = desc_;
  result.bitField0_ = to_bitField0_;
  onBuilt();
  return result;
}

@Override
public Builder clone() {
  return super.clone();
}
@Override
public Builder setField(
    com.google.protobuf.Descriptors.FieldDescriptor field,
    Object value) {
  return super.setField(field, value);
}
@Override
public Builder clearField(
    com.google.protobuf.Descriptors.FieldDescriptor field) {
  return super.clearField(field);
}
@Override
public Builder clearOneof(
    com.google.protobuf.Descriptors.OneofDescriptor oneof) {
  return super.clearOneof(oneof);
}
@Override
public Builder setRepeatedField(
    com.google.protobuf.Descriptors.FieldDescriptor field,
    int index, Object value) {
```

```
  return super.setRepeatedField(field, index, value);
}
@Override
public Builder addRepeatedField(
    com.google.protobuf.Descriptors.FieldDescriptor field,
    Object value) {
  return super.addRepeatedField(field, value);
}
@Override
public Builder mergeFrom(com.google.protobuf.Message other) {
  if (other instanceof SubscribeResp) {
    return mergeFrom((SubscribeResp)other);
  } else {
    super.mergeFrom(other);
    return this;
  }
}

public Builder mergeFrom(SubscribeResp other) {
  if (other == SubscribeResp.getDefaultInstance()) return this;
  if (other.hasSubReqID()) {
    setSubReqID(other.getSubReqID());
  }
  if (other.hasRespCode()) {
    setRespCode(other.getRespCode());
  }
  if (other.hasDesc()) {
    bitField0_ |= 0x00000004;
    desc_ = other.desc_;
    onChanged();
  }
  this.mergeUnknownFields(other.unknownFields);
  onChanged();
  return this;
}

@Override
public final boolean isInitialized() {
  if (!hasSubReqID()) {
    return false;
  }
  if (!hasRespCode()) {
    return false;
  }
  if (!hasDesc()) {
    return false;
  }
  return true;
}

@Override
public Builder mergeFrom(
    com.google.protobuf.CodedInputStream input,
    com.google.protobuf.ExtensionRegistryLite extensionRegistry)
```

```
    throws java.io.IOException {
  SubscribeResp parsedMessage = null;
  try {
    parsedMessage = PARSER.parsePartialFrom(input, extensionRegistry);
  } catch (com.google.protobuf.InvalidProtocolBufferException e) {
    parsedMessage = (SubscribeResp) e.getUnfinishedMessage();
    throw e.unwrapIOException();
  } finally {
    if (parsedMessage != null) {
      mergeFrom(parsedMessage);
    }
  }
  return this;
}
private int bitField0_;

private int subReqID_ ;
/**
 * <code>required int32 subReqID = 1;</code>
 * @return Whether the subReqID field is set.
 */
public boolean hasSubReqID() {
  return ((bitField0_ & 0x00000001) != 0);
}
/**
 * <code>required int32 subReqID = 1;</code>
 * @return The subReqID.
 */
public int getSubReqID() {
  return subReqID_;
}
/**
 * <code>required int32 subReqID = 1;</code>
 * @param value The subReqID to set.
 * @return This builder for chaining.
 */
public Builder setSubReqID(int value) {
  bitField0_ |= 0x00000001;
  subReqID_ = value;
  onChanged();
  return this;
}
/**
 * <code>required int32 subReqID = 1;</code>
 * @return This builder for chaining.
 */
public Builder clearSubReqID() {
  bitField0_ = (bitField0_ & ~0x00000001);
  subReqID_ = 0;
  onChanged();
  return this;
}

private int respCode_ ;
```

```
/**
 * <code>required int32 respCode = 2;</code>
 * @return Whether the respCode field is set.
 */
public boolean hasRespCode() {
  return ((bitField0_ & 0x00000002) != 0);
}
/**
 * <code>required int32 respCode = 2;</code>
 * @return The respCode.
 */
public int getRespCode() {
  return respCode_;
}
/**
 * <code>required int32 respCode = 2;</code>
 * @param value The respCode to set.
 * @return This builder for chaining.
 */
public Builder setRespCode(int value) {
  bitField0_ |= 0x00000002;
  respCode_ = value;
  onChanged();
  return this;
}
/**
 * <code>required int32 respCode = 2;</code>
 * @return This builder for chaining.
 */
public Builder clearRespCode() {
  bitField0_ = (bitField0_ & ~0x00000002);
  respCode_ = 0;
  onChanged();
  return this;
}

private Object desc_ = "";
/**
 * <code>required string desc = 3;</code>
 * @return Whether the desc field is set.
 */
public boolean hasDesc() {
  return ((bitField0_ & 0x00000004) != 0);
}
/**
 * <code>required string desc = 3;</code>
 * @return The desc.
 */
public String getDesc() {
  Object ref = desc_;
  if (!(ref instanceof String)) {
    com.google.protobuf.ByteString bs =
        (com.google.protobuf.ByteString) ref;
    String s = bs.toStringUtf8();
```

```
        if (bs.isValidUtf8()) {
          desc_ = s;
        }
        return s;
      } else {
        return (String) ref;
      }
    }
    /**
     * <code>required string desc = 3;</code>
     * @return The bytes for desc.
     */
    public com.google.protobuf.ByteString
        getDescBytes() {
      Object ref = desc_;
      if (ref instanceof String) {
        com.google.protobuf.ByteString b =
            com.google.protobuf.ByteString.copyFromUtf8(
                (String) ref);
        desc_ = b;
        return b;
      } else {
        return (com.google.protobuf.ByteString) ref;
      }
    }
    /**
     * <code>required string desc = 3;</code>
     * @param value The desc to set.
     * @return This builder for chaining.
     */
    public Builder setDesc(
        String value) {
      if (value == null) {
  throw new NullPointerException();
}
bitField0_ |= 0x00000004;
      desc_ = value;
      onChanged();
      return this;
    }
    /**
     * <code>required string desc = 3;</code>
     * @return This builder for chaining.
     */
    public Builder clearDesc() {
      bitField0_ = (bitField0_ & ~0x00000004);
      desc_ = getDefaultInstance().getDesc();
      onChanged();
      return this;
    }
    /**
     * <code>required string desc = 3;</code>
     * @param value The bytes for desc to set.
     * @return This builder for chaining.
```

```
     */
    public Builder setDescBytes(
        com.google.protobuf.ByteString value) {
      if (value == null) {
  throw new NullPointerException();
}
bitField0_ |= 0x00000004;
      desc_ = value;
      onChanged();
      return this;
    }
    @Override
    public final Builder setUnknownFields(
        final com.google.protobuf.UnknownFieldSet unknownFields) {
      return super.setUnknownFields(unknownFields);
    }

    @Override
    public final Builder mergeUnknownFields(
        final com.google.protobuf.UnknownFieldSet unknownFields) {
      return super.mergeUnknownFields(unknownFields);
    }


    // @@protoc_insertion_point(builder_scope:netty.SubscribeResp)
  }

  // @@protoc_insertion_point(class_scope:netty.SubscribeResp)
  private static final SubscribeResp DEFAULT_INSTANCE;
  static {
    DEFAULT_INSTANCE = new SubscribeResp();
  }

  public static SubscribeResp getDefaultInstance() {
    return DEFAULT_INSTANCE;
  }

  @Deprecated public static final com.google.protobuf.Parser<SubscribeResp>
      PARSER = new com.google.protobuf.AbstractParser<SubscribeResp>() {
    @Override
    public SubscribeResp parsePartialFrom(
        com.google.protobuf.CodedInputStream input,
        com.google.protobuf.ExtensionRegistryLite extensionRegistry)
        throws com.google.protobuf.InvalidProtocolBufferException {
      return new SubscribeResp(input, extensionRegistry);
    }
  };

  public static com.google.protobuf.Parser<SubscribeResp> parser() {
    return PARSER;
  }

  @Override
  public com.google.protobuf.Parser<SubscribeResp> getParserForType() {
```

```
      return PARSER;
    }

    @Override
    public SubscribeResp getDefaultInstanceForType() {
      return DEFAULT_INSTANCE;
    }

  }

  private static final com.google.protobuf.Descriptors.Descriptor
    internal_static_netty_SubscribeResp_descriptor;
  private static final
    com.google.protobuf.GeneratedMessageV3.FieldAccessorTable
      internal_static_netty_SubscribeResp_fieldAccessorTable;

  public static com.google.protobuf.Descriptors.FileDescriptor
      getDescriptor() {
    return descriptor;
  }
  private static  com.google.protobuf.Descriptors.FileDescriptor
      descriptor;
  static {
    String[] descriptorData = {
      "\n\023SubscribeResp.proto\022\005netty\"A\n\rSubscrib" +
      "eResp\022\020\n\010subReqID\030\001 \002(\005\022\020\n\010respCode\030\002 \0
2(" +
      "\005\022\014\n\004desc\030\003 \002(\tBJ\n4club.wujingjian.com.w" +
      "ujingjian.netty.serial.java.vo2B\022Subscri" +
      "beRespProto"
    };
    descriptor = com.google.protobuf.Descriptors.FileDescriptor
      .internalBuildGeneratedFileFrom(descriptorData,
        new com.google.protobuf.Descriptors.FileDescriptor[] {
        });
    internal_static_netty_SubscribeResp_descriptor =
      getDescriptor().getMessageTypes().get(0);
    internal_static_netty_SubscribeResp_fieldAccessorTable = new
      com.google.protobuf.GeneratedMessageV3.FieldAccessorTable(
        internal_static_netty_SubscribeResp_descriptor,
        new String[] { "SubReqID", "RespCode", "Desc", });
  }

  // @@protoc_insertion_point(outer_class_scope)
}
```

测试类: TestSubscribeReqProto.java

```
package club.wujingjian.com.wujingjian.netty.serial.protobuf.vo2;

import com.google.protobuf.InvalidProtocolBufferException;

public class TestSubscribeReqProto {
```

```
    private static byte[] encode(SubscribeReqProto.SubscribeReq req) {
        return req.toByteArray();
    }

    private static SubscribeReqProto.SubscribeReq decode(byte[] body) throws InvalidProtocol
ufferException {
        return SubscribeReqProto.SubscribeReq.parseFrom(body);
    }

    private static SubscribeReqProto.SubscribeReq createSubscribeReq() {
        SubscribeReqProto.SubscribeReq.Builder builder = SubscribeReqProto.SubscribeReq.ne
Builder();
        builder.setSubReqID(1);
        builder.setUserName("wujingjian");
        builder.setProductName("Netty Book");
        builder.setAddress("BeiJing");
        return  builder.build();
    }

    public static void main(String[] args) throws InvalidProtocolBufferException {
        SubscribeReqProto.SubscribeReq req = createSubscribeReq();
        System.out.println("Before encode :" + req.toString());
        SubscribeReqProto.SubscribeReq req2 = decode(encode(req));
        System.out.println("After decode :" + req.toString());
        System.out.println("Assert equal : --> " + req2.equals(req)); // true
    }
}
```

server端:

SubReqServer.java

```
package club.wujingjian.com.wujingjian.netty.serial.protobuf.server;

import club.wujingjian.com.wujingjian.netty.serial.protobuf.vo2.SubscribeReqProto;
import io.netty.bootstrap.ServerBootstrap;
import io.netty.channel.ChannelFuture;
import io.netty.channel.ChannelInitializer;
import io.netty.channel.ChannelOption;
import io.netty.channel.EventLoopGroup;
import io.netty.channel.nio.NioEventLoopGroup;
import io.netty.channel.socket.SocketChannel;
import io.netty.channel.socket.nio.NioServerSocketChannel;
import io.netty.handler.codec.protobuf.ProtobufDecoder;
import io.netty.handler.codec.protobuf.ProtobufEncoder;
import io.netty.handler.codec.protobuf.ProtobufVarint32FrameDecoder;
import io.netty.handler.codec.protobuf.ProtobufVarint32LengthFieldPrepender;
import io.netty.handler.logging.LogLevel;
import io.netty.handler.logging.LoggingHandler;

public class SubReqServer {

    public  void bind(int port) throws Exception {
```

```
        EventLoopGroup bossGroup = new NioEventLoopGroup();
        EventLoopGroup workerGroup = new NioEventLoopGroup();
        try {
            ServerBootstrap b = new ServerBootstrap();
            b.group(bossGroup, workerGroup)
                    .channel(NioServerSocketChannel.class)
                    .option(ChannelOption.SO_BACKLOG,100)
                    .handler(new LoggingHandler(LogLevel.INFO))
                    .childHandler(new ChannelInitializer<SocketChannel>() {
                        @Override
                        protected void initChannel(SocketChannel socketChannel) throws Exception {
                            //处理半包
                            socketChannel.pipeline().addLast(new ProtobufVarint32FrameDecoder());
                            //ProtobufDecoder()中参数是com.google.protobuf.MessageLite,实际上就是
诉ProtobufDecoder需要解码的目标类是什么
                            socketChannel.pipeline().addLast(new ProtobufDecoder(SubscribeReqProto.
ubscribeReq.getDefaultInstance()));
                            socketChannel.pipeline().addLast(new ProtobufVarint32LengthFieldPrepend
r());
                            socketChannel.pipeline().addLast(new ProtobufEncoder());
                            socketChannel.pipeline().addLast(new SubReqServerHandler());
                        }
                    });

            ChannelFuture f = b.bind(port).sync();
            f.channel().closeFuture().sync();
        } finally {
            bossGroup.shutdownGracefully();
            workerGroup.shutdownGracefully();
        }
    }

    public static void main(String[] args) throws Exception {
        int port = 8080;
        if (args != null && args.length > 0) {
            port = Integer.parseInt(args[0]);
        }
        new SubReqServer().bind(port);

    }
}
```

SubReqServerHandler.java

```
package club.wujingjian.com.wujingjian.netty.serial.protobuf.server;

import club.wujingjian.com.wujingjian.netty.serial.protobuf.vo2.SubscribeReqProto;
import club.wujingjian.com.wujingjian.netty.serial.protobuf.vo2.SubscribeRespProto;
import io.netty.channel.ChannelHandlerAdapter;
import io.netty.channel.ChannelHandlerContext;

public class SubReqServerHandler extends ChannelHandlerAdapter {
```

```
    @Override
    public void channelRead(ChannelHandlerContext ctx, Object msg) throws Exception {
        SubscribeReqProto.SubscribeReq req = (SubscribeReqProto.SubscribeReq) msg;
        if ("wujingjian".equalsIgnoreCase(req.getUserName())) {
            System.out.println("Service accept client subscribe req : [ " + req.toString() + "]");
            ctx.writeAndFlush(resp(req.getSubReqID()));
        }
    }

    private SubscribeRespProto.SubscribeResp resp(int subReqID) {
        SubscribeRespProto.SubscribeResp.Builder builder = SubscribeRespProto.SubscribeResp
newBuilder();
        builder.setSubReqID(subReqID);
        builder.setRespCode(0);
        builder.setDesc("Netty Book order succeed");
        return builder.build();
    }

    @Override
    public void exceptionCaught(ChannelHandlerContext ctx, Throwable cause) throws Excepti
n {
        cause.printStackTrace();;
        ctx.close();
    }
}
```

client端:SubReqClient.java

```
package club.wujingjian.com.wujingjian.netty.serial.protobuf.client;

import club.wujingjian.com.wujingjian.netty.serial.protobuf.vo2.SubscribeRespProto;
import io.netty.bootstrap.Bootstrap;
import io.netty.channel.ChannelFuture;
import io.netty.channel.ChannelInitializer;
import io.netty.channel.ChannelOption;
import io.netty.channel.EventLoopGroup;
import io.netty.channel.nio.NioEventLoopGroup;
import io.netty.channel.socket.SocketChannel;
import io.netty.channel.socket.nio.NioSocketChannel;
import io.netty.handler.codec.protobuf.ProtobufDecoder;
import io.netty.handler.codec.protobuf.ProtobufEncoder;
import io.netty.handler.codec.protobuf.ProtobufVarint32FrameDecoder;
import io.netty.handler.codec.protobuf.ProtobufVarint32LengthFieldPrepender;

public class SubReqClient {

    public void connect(int port, String host) throws Exception {
        EventLoopGroup group = new NioEventLoopGroup();
        try {
            Bootstrap b = new Bootstrap();
            b.group(group).channel(NioSocketChannel.class)
                    .option(ChannelOption.TCP_NODELAY,true)
                    .handler(new ChannelInitializer<SocketChannel>() {
```

```
                    @Override
                    protected void initChannel(SocketChannel socketChannel) throws Exception {
                        socketChannel.pipeline().addLast(new ProtobufVarint32FrameDecoder());
                        socketChannel.pipeline().addLast(new ProtobufDecoder(SubscribeRespProto
SubscribeResp.getDefaultInstance()));
                        socketChannel.pipeline().addLast(new ProtobufVarint32LengthFieldPrepend
r());
                        socketChannel.pipeline().addLast(new ProtobufEncoder());
                        socketChannel.pipeline().addLast(new SubReqClientHandler());
                    }
                });
            ChannelFuture f = b.connect(host,port).sync();
            f.channel().closeFuture().sync();
        } finally {
            group.shutdownGracefully();
        }
    }

    public static void main(String[] args) throws Exception {
        int port = 8080;
        if (args != null && args.length > 0) {
            port = Integer.parseInt(args[0]);
        }
        new SubReqClient().connect(port, "127.0.0.1");
    }
}
```

SubReqClientHandler.java

```
package club.wujingjian.com.wujingjian.netty.serial.protobuf.client;

import club.wujingjian.com.wujingjian.netty.serial.java.vo.SubscribeReq;
import club.wujingjian.com.wujingjian.netty.serial.protobuf.vo2.SubscribeReqProto;
import io.netty.channel.ChannelHandlerAdapter;
import io.netty.channel.ChannelHandlerContext;

public class SubReqClientHandler extends ChannelHandlerAdapter {

    public SubReqClientHandler(){}

    @Override
    public void channelActive(ChannelHandlerContext ctx) throws Exception {
        for (int i = 0; i < 10; i++) {
            ctx.write(subReq(i));
        }
        ctx.flush();
    }

    private SubscribeReqProto.SubscribeReq subReq(int i) {
        SubscribeReqProto.SubscribeReq.Builder build = SubscribeReqProto.SubscribeReq.newB
ilder();
        build.setAddress("abc地址");
        build.setProductName("Netty abc权威指南");
```

```
        build.setSubReqID(i);
        build.setUserName("wujingjian");
        return build.build();
    }

    @Override
    public void channelRead(ChannelHandlerContext ctx, Object msg) throws Exception {
        System.out.println("Receive server response :[" + msg + " ]");
    }

    @Override
    public void channelReadComplete(ChannelHandlerContext ctx) throws Exception {
        ctx.flush();
    }

    @Override
    public void exceptionCaught(ChannelHandlerContext ctx, Throwable cause) throws Excepti
n {
        cause.printStackTrace();;
        ctx.close();
    }
}
```

但是对中文输出有问题,

server端输出:

```
Run:  SubReqServer (1)   SubReqClient (1)
]
Service accept client subscribe req : [ subReqID: 5
userName: "wujingjian"
productName: "Netty abc\346\235\203\345\250\201\346\214\207\345\215\227"
address: "abc\345\234\260\345\235\200"
]
Service accept client subscribe req : [ subReqID: 6
userName: "wujingjian"
productName: "Netty abc\346\235\203\345\250\201\346\214\207\345\215\227"
address: "abc\345\234\260\345\235\200"
]
Service accept client subscribe req : [ subReqID: 7
userName: "wujingjian"
productName: "Netty abc\346\235\203\345\250\201\346\214\207\345\215\227"
address: "abc\345\234\260\345\235\200"
]
Service accept client subscribe req : [ subReqID: 8
userName: "wujingjian"
productName: "Netty abc\346\235\203\345\250\201\346\214\207\345\215\227"
address: "abc\345\234\260\345\235\200"
]
Service accept client subscribe req : [ subReqID: 9
userName: "wujingjian"
productName: "Netty abc\346\235\203\345\250\201\346\214\207\345\215\227"
address: "abc\345\234\260\345\235\200"
]
```

client端输出:

```
Run:  SubReqServer (1)  SubReqClient (1)
desc: "Netty Book order succeed"
 ]
Receive server response :[subReqID: 4
respCode: 0
desc: "Netty Book order succeed"
 ]
Receive server response :[subReqID: 5
respCode: 0
desc: "Netty Book order succeed"
 ]
Receive server response :[subReqID: 6
respCode: 0
desc: "Netty Book order succeed"
 ]
Receive server response :[subReqID: 7
respCode: 0
desc: "Netty Book order succeed"
 ]
Receive server response :[subReqID: 8
respCode: 0
desc: "Netty Book order succeed"
 ]
Receive server response :[subReqID: 9
respCode: 0
desc: "Netty Book order succeed"
 ]
```