

Lección 10 - Protocolos de mercado

Tecnologías del sector financiero

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Práctica 1: Introducción a QuickFix.

Los archivos de configuración no se han modificado, ya que se desea ejecutar este programa en ámbito local, y con la IP del host local y el puerto 10000 no debería haber problema alguno.

Ejecutando el programa, se ve que cada 6 segundos llega un mensaje para comprobar que la comunicación siga en pie, como se ve a continuación:

```
Run: AcceptorRunner x InitiatorRunner x
02:27:56.642 [F] Message Processor DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=0,lin=82,rem=82,offset=60,state=4 8-FIX.4.4q9=77j35=Ag34=1j49=Initiatorj52=20181224-01
02:27:56.666 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - From admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=77j35=Ag34=1j49=Initiator
02:27:56.678 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - To admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=77j35=Ag34=1j49=Acceptor
02:27:56.683 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - On Logon Session ID [FIX.4.4:Acceptor->Initiator]
02:28:02.887 [F] Timerj DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - To admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=2j49=Acceptorj52=20181224-01
02:28:02.896 [N] Processor-2j DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
02:28:02.896 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0,lin=82,rem=82,offset=0,state=1
02:28:02.897 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0,lin=82,rem=82,offset=15,state=3
02:28:02.897 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0,lin=82,rem=82,offset=75,state=4
02:28:02.897 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0,lin=82,rem=82,offset=75,state=4
02:28:02.897 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82,lin=82,rem=82,offset=82,state=4 8-FIX.4.4q9=60j35=Qj34=2j49=Initiatorj52=20181224-01
02:28:02.897 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - From admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=2j49=Initia
02:28:02.897 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - To admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=2j49=Acceptor
02:28:02.896 [N] Processor-2j DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
02:28:02.896 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0,lin=82,rem=82,offset=0,state=1
02:28:02.896 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0,lin=82,rem=82,offset=15,state=3
02:28:02.896 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0,lin=82,rem=82,offset=75,state=4
02:28:02.896 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0,lin=82,rem=82,offset=75,state=4
02:28:02.896 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82,lin=82,rem=82,offset=82,state=4 8-FIX.4.4q9=60j35=Qj34=3j49=Initiatorj52=20181224-01
02:28:02.896 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - From admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=3j49=Initia
02:28:02.896 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - To admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=3j49=Acceptorj52=20181224-01
02:28:14.892 [N] Processor-2j DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
02:28:14.892 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0,lin=82,rem=82,offset=0,state=1
02:28:14.892 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0,lin=82,rem=82,offset=15,state=3
02:28:14.892 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0,lin=82,rem=82,offset=75,state=4
02:28:14.892 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0,lin=82,rem=82,offset=75,state=4
02:28:14.892 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82,lin=82,rem=82,offset=82,state=4 8-FIX.4.4q9=60j35=Qj34=4j49=Initiatorj52=20181224-01
02:28:14.892 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - From admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=4j49=Initia
02:28:14.893 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - To admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=4j49=Acceptorj52=20181224-01
02:28:20.886 [F] Timerj DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - To admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=5j49=Acceptorj52=20181224-01
02:28:20.892 [N] Processor-2j DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
02:28:20.893 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0,lin=82,rem=82,offset=0,state=1
02:28:20.893 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0,lin=82,rem=82,offset=15,state=3
02:28:20.893 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0,lin=82,rem=82,offset=75,state=4
02:28:20.893 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0,lin=82,rem=82,offset=75,state=4
02:28:20.893 [N] Processor-2j DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82,lin=82,rem=82,offset=82,state=4 8-FIX.4.4q9=60j35=Qj34=5j49=Initiatorj52=20181224-01
02:28:20.893 [F] Message Processor DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - From admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=60j35=Qj34=5j49=Initia
```

En el caso del Acceptor.

```

Run:  AcceptorRunner  x  InitiatorRunner  x
02:28:02.891 [NiOProcessor-2] DEBUG o.a.m.f.codec.FixedLengthFieldFormat - found checksum: pos=0, lim=82, rem=82, offset=75, state=4
02:28:02.891 [QF Message Processor] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82, lim=82, rem=0, offset=82, state=4 8-FIX, 4.4q9-60j35-0q34-2q49-Acceptor[52-20181224:01]
02:28:02.893 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - From admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-2q49-Acceptor[52-20181224:01]]
02:28:02.894 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - To admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-2q49-Initiator[52-20181224:01]]
02:28:08.888 [NiOProcessor-2] DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
02:28:08.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0, lim=82, rem=82, offset=0, state=1
02:28:08.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0, lim=82, rem=82, offset=15, state=3
02:28:08.889 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0, lim=82, rem=82, offset=75, state=4
02:28:08.889 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0, lim=82, rem=82, offset=75, state=4
02:28:08.889 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82, lim=82, rem=0, offset=82, state=4 8-FIX, 4.4q9-60j35-0q34-3q49-Acceptor[52-20181224:01]
02:28:08.891 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - From admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-3q49-Acceptor[52-20181224:01]]
02:28:08.891 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - To admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-3q49-Initiator[52-20181224:01]]
02:28:14.887 [NiOProcessor-2] DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
02:28:14.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0, lim=82, rem=82, offset=0, state=1
02:28:14.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0, lim=82, rem=82, offset=15, state=3
02:28:14.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0, lim=82, rem=82, offset=75, state=4
02:28:14.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0, lim=82, rem=82, offset=75, state=4
02:28:14.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82, lim=82, rem=0, offset=82, state=4 8-FIX, 4.4q9-60j35-0q34-4q49-Acceptor[52-20181224:01]
02:28:14.889 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - From admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-4q49-Acceptor[52-20181224:01]]
02:28:14.890 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - To admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-4q49-Initiator[52-20181224:01]]
02:28:20.888 [NiOProcessor-2] DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
02:28:20.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0, lim=82, rem=82, offset=0, state=1
02:28:20.889 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0, lim=82, rem=82, offset=15, state=3
02:28:20.889 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0, lim=82, rem=82, offset=75, state=4
02:28:20.889 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0, lim=82, rem=82, offset=75, state=4
02:28:20.889 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82, lim=82, rem=0, offset=82, state=4 8-FIX, 4.4q9-60j35-0q34-5q49-Acceptor[52-20181224:01]
02:28:20.890 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - From admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-5q49-Acceptor[52-20181224:01]]
02:28:20.891 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - To admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-5q49-Initiator[52-20181224:01]]
02:28:26.887 [NiOProcessor-2] DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
02:28:26.887 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0, lim=82, rem=82, offset=0, state=1
02:28:26.887 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0, lim=82, rem=82, offset=15, state=3
02:28:26.887 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0, lim=82, rem=82, offset=75, state=4
02:28:26.887 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0, lim=82, rem=82, offset=75, state=4
02:28:26.888 [NiOProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82, lim=82, rem=0, offset=82, state=4 8-FIX, 4.4q9-60j35-0q34-6q49-Acceptor[52-20181224:01]
02:28:26.889 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - From admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-6q49-Acceptor[52-20181224:01]]
02:28:26.889 [QF Message Processor] DEBUG c.c.u.t.l.l.QuickFixInitiator - To admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8-FIX, 4.4q9-60j35-0q34-6q49-Initiator[52-20181224:01]]

```

En el caso del Initiator.

También manda un paquete para informar de que uno de los dos puntos ha finalizado la sesión:

```
02:29:02.892 [QF] Message Processor] DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - From admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8
02:29:04.855 [QF] Message Processor] INFO quickfix.Session - [FIX.4.4:Acceptor->Initiator] Disconnecting: Encountered END_OF_STREAM
02:29:04.855 [QF] Message Processor] DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - On Logout Session ID [FIX.4.4:Acceptor->Initiator]
```

Práctica 2: Reproducir error

Para reproducir un error, se han lanzado ambos programas y parado el *initiator*, después se ha vuelto a lanzar para que se intente reconectar.

El error que muestra es el siguiente:

```
[NioProcessor-5] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=132,lim=132,rem=0,offset=132,state=4 8=FIX.4.4q9=106q35=5q34=5q49=Initiatorq52=20181226-19:07:15
[QF] Message Processor] DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - From admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=106q35=5q34=5q49=Initiatorq52=20181226-19:07:15]
[QF] Message Processor] DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - To admin Session ID [FIX.4.4:Acceptor->Initiator], Message [8=FIX.4.4q9=80q35=5q34=3q49=Acceptorq52=20181226-19:07:15]
[QF] Message Processor] INFO quickfix.Session - [FIX.4.4:Acceptor->Initiator] Disconnecting: Received logout request: MsgSeqNum too low, expecting 4 but received 1
[QF] Message Processor] DEBUG c.c.u.t.l.acceptor.QuickFixAcceptor - On Logout Session ID [FIX.4.4:Acceptor->Initiator]
[NioProcessor-1] INFO q.mina.acceptor.AcceptorIoHandler - MINA session created: local=/127.0.0.1:10000, class org.apache.mina.transport.socket.nio.NioSocketSession, remote=/2
```

En él se puede leer que ha habido un conflicto con los números de la secuencia de mensajes (se esperaba un 4 y se ha obtenido un 1). Esto se debe a que FIX mantiene una sesión abierta y enumera los mensajes para garantizar la viabilidad de la comunicación. Si el campo 34 no es igual al número del contador del receptor, muestra el mensaje y empieza de nuevo.

Práctica 3: Reproducir una subscripción a datos de mercado.

Tras generar un mensaje en la parte del *initiator*, enviarlo, y pedirlo y reproducirlo desde la parte del *acceptor*, somos capaces de ver el siguiente mensaje en el log, indicando que ha llegado correctamente:

```
.377 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=129,lim=129,rem=0,offset=129,state=4 8=FIX.4.4q9=106q35=Xq34=6q49=
.379 [QF] Message Processor] DEBUG c.c.u.t.l.m.MarketDataSubscriber - ----- New message received----- Prices [270=10.2]
.330 [QF] Timer] DEBUG c.c.u.t.l.m.MarketDataSubscriber - To admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8=FIX.4.4q9=60q35=0q34=4q49=In
.377 [NioProcessor-2] DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
.378 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0,lim=129,rem=129,offset=0,state=1
.378 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - body length = 106: pos=0,lim=129,rem=129,offset=16,state=3
.378 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0,lim=129,rem=129,offset=122,state=4
.378 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0,lim=129,rem=129,offset=122,state=4
.379 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=129,lim=129,rem=0,offset=129,state=4 8=FIX.4.4q9=106q35=Xq34=7q49=
.380 [QF] Message Processor] DEBUG c.c.u.t.l.m.MarketDataSubscriber - ----- New message received----- Prices [270=10.3]
.330 [QF] Timer] DEBUG c.c.u.t.l.m.MarketDataSubscriber - To admin Session ID [FIX.4.4:Initiator->Acceptor], Message [8=FIX.4.4q9=60q35=0q34=5q49=In
.961 [NioProcessor-2] DEBUG o.a.m.f.codec.ProtocolCodecFilter - Processing a MESSAGE RECEIVED for session 1
.962 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - detected header: pos=0,lim=82,rem=82,offset=0,state=1
.962 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - body length = 60: pos=0,lim=82,rem=82,offset=15,state=3
.962 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - message body found: pos=0,lim=82,rem=82,offset=75,state=4
.962 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - found checksum: pos=0,lim=82,rem=82,offset=75,state=4
.962 [NioProcessor-2] DEBUG q.mina.message.FIXMessageDecoder - parsed message: pos=82,lim=82,rem=0,offset=82,state=4 8=FIX.4.4q9=60q35=0q34=8q49=Acc
```