Question 1: What is the code part that shows that the Server assigns the correlation ID to the response?

The correlation ID is taken from the delivery parameter (the message from client). Then the server assign it to replyProps.

```java
// RPCClient.java
AMQP.BasicProperties replyProps = new AMQP.BasicProperties
                .Builder()
                .correlationId(delivery.getProperties().getCorrelationId())
                .build();
```

Then server publish the message with response and correlation ID in replyProps.

```java
// RPCClient.java
channel.basicPublish("", delivery.getProperties().getReplyTo(), replyProps,
response.getBytes("UTF-8"));
```

Question 2: You base on both code of Client and Server program to explain which code shows that the Client sends request to Server through rpc_queue and create a new queue to wait for the reply of the Server.

Code shows that the Client sends request to Server through rpc_queue and create a new queue to wait for the reply

```java
// RPCClient.java

// Client sends request to Server through rpc_queue
channel.basicPublish("", requestQueueName, props, message.getBytes("UTF-8"));

// Client create a new queue to wait for the reply
String ctag = channel.basicConsume(replyQueueName, true, (consumerTag,
delivery) -> {
    if (delivery.getProperties().getCorrelationId().equals(corrId)) {
        response.offer(new String(delivery.getBody(), "UTF-8"));
    }
}, consumerTag -> {});

String result = response.take();
```

```java
// RPCServer.java

// Server get response from client
```
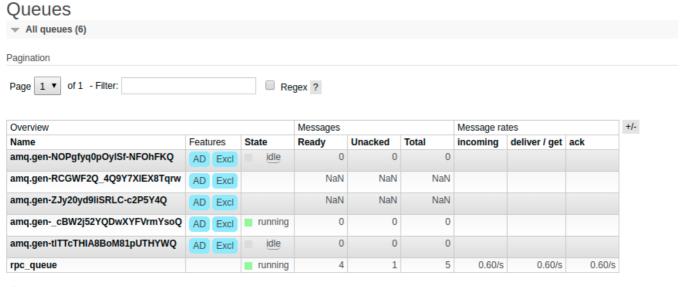
```
    channel.queueDeclare(RPC_QUEUE_NAME, false, false, false, null);
    channel.queuePurge(RPC_QUEUE_NAME);

    ...

    String message = new String(delivery.getBody(), "UTF-8");

    // Server return result to client via reply queue
    channel.basicPublish("", delivery.getProperties().getReplyTo(), replyProps,
    response.getBytes("UTF-8"));
    channel.basicAck(delivery.getEnvelope().getDeliveryTag(), false);
```

Question 3:

There are one 'rpc_queue' and several other queues for replying result to clients.

Queues
▼ All queues (6)

Pagination

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Overview			Messages			Message rates			+/-
Name	Features	**State**	**Ready**	**Unacked**	**Total**	**incoming**	**deliver / get**	**ack**	
amq.gen-NOPgfyq0pOyISf-NFOhFKQ	AD Excl	☐ idle	0	0	0				
amq.gen-RCGWF2Q_4Q9Y7XIEX8Tqrw	AD Excl		NaN	NaN	NaN				
amq.gen-ZJy20yd9liSRLC-c2P5Y4Q	AD Excl		NaN	NaN	NaN				
amq.gen-_cBW2j52YQDwXYFVrmYsoQ	AD Excl	■ running	0	0	0				
amq.gen-tITTcTHIA8BoM81pUTHYWQ	AD Excl	☐ idle	0	0	0				
rpc_queue		■ running	4	1	5	0.60/s	0.60/s	0.60/s	

▶ Add a new queue

Question 4: What is the IP address of your 2 machines? How to ping each other?

IP address of server: 192.168.1.188 IP address of client: 192.168.1.83

In order to ping each other, use the `ping` command line:

```
$ ping 192.168.1.83
PING 192.168.1.83 (192.168.1.83) 56(84) bytes of data.
64 bytes from 192.168.1.83: icmp_seq=1 ttl=64 time=42.1 ms
64 bytes from 192.168.1.83: icmp_seq=2 ttl=64 time=78.7 ms
64 bytes from 192.168.1.83: icmp_seq=3 ttl=64 time=86.1 ms
64 bytes from 192.168.1.83: icmp_seq=4 ttl=64 time=12.2 ms
64 bytes from 192.168.1.83: icmp_seq=5 ttl=64 time=30.2 ms
64 bytes from 192.168.1.83: icmp_seq=6 ttl=64 time=201 ms
64 bytes from 192.168.1.83: icmp_seq=7 ttl=64 time=10.2 ms
64 bytes from 192.168.1.83: icmp_seq=8 ttl=64 time=183 ms
```

Question 5: Can you watch the video in the client machine? Evaluate the quality of the video streaming service.

Yes, we can watch the video in the client machine. The quality is quite the same, compare to original video.

Question 6: What is the result of the ping test? Can you see an increase of 100 miliseconds

Yes, after adding the delay of 100ms, all the ping result from client has the time is 100ms.

Question 7: Evaluate the video quality at the Client machine. How can you conclude the impact of fix delay on video streaming service?

The video quality is still the same. However, the video on client side start later about 100ms.

Question 8: Evaluate the video quality at the Client machine. How can you conclude the impact of delay variation on video streaming service?

The video quality is still the same. However, the rate of the video is unstable and delayed.

Question 9: Evaluate the video quality at the Client machine. How can you conclude the impact of fix loss rate on video streaming service? Try to increase the value of loss rate to see the impact more clear.

The quality of video is still the same. However, the loss rate increase the buffering time.

Question 10: Evaluate the video quality at the Client machine. How can you conclude the impact of loss rate variation on video streaming service? Try to increase this value to see the impact more clear.

The impact of loss rate variation on video straming service is invisible.

Question 11: Evaluate the video quality at the Client machine. How can you conclude the impact of packet duplication on video streaming service? Try to increase this value to see the impact more clear.

The impact of packet duplication on video straming service is invisible.

Question 12: Evaluate the video quality at the Client machine. How can you conclude the impact of packet corruption on video streaming service?

The impact of corruption on video streaming service is invisible.