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CS 3700-001: Computer Networks, Spring 2020, Dr. Weiying Zhu
Example questions related to Homework 2, 3, 4 in Exam 1, Just for Review, No submission!
These are just examples. Similar questions, NOT a subset of these questions, will be included in Exam 1
Please use the PPT slides and in-class Notes posted on Blackboard to review all relevant topics for Exam 1

Problem A. Fill in the blank with the given exemplary Java statement(s) that accomplishes each given function in building up a TCP connection, sending data over this TCP connection, closing a TCP connection, . The instances with the same name below are the same instance, e.g., the `socket1` in (a) is the `socket1` created in (k).

- ____ The TCP client initiates a TCP connection and connects to a TCP server via this TCP connection
- ____ The TCP client sends data to the TCP server over the TCP connection.
- ____ The TCP client receives data from the TCP server over the TCP connection.
- ____ The TCP server accepts a TCP connection and connects to a TCP client via this TCP connection.
- ____ The TCP server sends data to the TCP client over the TCP connection.
- ____ The TCP server receives data from the TCP client over the TCP connection.
- ____ The TCP client closes the TCP connection.
- ____ The TCP server closes the TCP connection.
- ____ Create a UDP socket.
- ____ Receive data from a UDP socket.
- ____ Send data to a UDP socket.

(a)
```
BufferedReader in1 = new BufferedReader(new InputStreamReader(socket1.getInputStream()));
String aLine = in1.readLine());
```

(b)
```
String cLine = new String("How do you do?");
byte[] buf2 = cLine.getBytes();
packet2 = new DatagramPacket(buf2, buf2.length, packet1.getAddress(), packet1.getPort());
socket4.send(packet2);
```

(c)
```
out2.close();
in2.close();
socket3.close();
```

(d)
```
PrintWriter out2 = new PrintWriter(socket3.getOutputStream(), true);
out2.println("hello!");
```

(e)
```
byte[] buf1 = new byte[256];
packet1 = new DatagramPacket(buf1, buf1.length);
socket4.receive(packet1);
```

(f)
```
ServerSocket socket2 = new ServerSocket(4567);
Socket socket3 = socket2.accept()
```

(g)
```
out1.close();
in1.close();
socket1.close();
```

(h)
```
PrintWriter out1 = new PrintWriter(socket1.getOutputStream(), true);
out1.println("how are you doing?");
```

(i)
```
BufferedReader in2 = new BufferedReader(new InputStreamReader(socket3.getInputStream()));
String bLine = in2.readLine();
```

(j)
```
DatagramSocket socket4 = new DatagramSocket(8899);
```

(k)
```
Socket socket1 = new Socket("147.153.174.210", 4567);
```

Problem B. Fill in True or False for each of the following statement regarding HTTP or SMTP

____ (a) Both HTTP and SMTP use TCP for reliably transmitting application-layer data.

____ (b) HTTP client sends HTTP response message to HTTP server.

____ (c) HTTP server may enclose the file asked for by HTTP client in the entity body of the HTTP response message and send it to HTTP client.

____ (d) Both HTTP request message and HTTP response message include header lines.

____ (e) SMTP may be used by the sender's email server to push an email to the receiver's email server.

____ (f) Both SMTP client and SMTP server may be email servers.

____ (g) SMTP server sends commands such as HELO and MAIL FROM to SMTP client.

____ (h) SMTP client sends responses containing status codes such as 220 and 250 to SMTP server.

____ (i) Since HTTP/2 is Binary based, the HTTP/1 semantics, such as verbs, methods, and headers, are not used in HTTP/2 any more.

Problem C. Multiple Choice

(1) A HTTP request message does NOT include _____ in its request line.

(a) method type (b) status code (c) version (d) url

(2) A HTTP response message includes _____ in its status line.

(a) method type (b) status code (c) hostname (d) url

(3) _____ is not true for the binary frame layer in HTTP/2.

(a) it is a new optimized encoding mechanism between the socket interface and the higher HTTP API exposed to the application-layer programs.

(b) it may be right on top of the TLS (Transport Layer Security) layer and uses TLS services

(c) it may be right on top of the transport layer and uses TCP (Transmission Control Protocol) services

(d) it may be right on top of the network layer and uses IP (Internet Protocol) services

(4) In HTTP/2, a _____ is a complete sequence of frames that map to a logical request or response message.

(a) stream (b) message (c) frame (d) frame payload

(5) Without prior knowledge on whether a Web server (a HTTP server) supports HTTP/2, a Web browser and this server may NOT _____.

(a) negotiate the use of HTTP/2 via a secure connection as part of the TLS handshake procedure

(b) upgrade a plaintext HTTP/1 connection to HTTP/2 via regular HTTP/1 request/response messages

(c) initiate a plaintext HTTP/2 connection directly using HTTP/2 frames

(d) initiate a plaintext HTTP/1 connection directly using HTTP/1 messages