Question 1: (15 points)
For each of the statements, mark True ("T") or False ("F"): 

1. ☐ True ("T") or False ("F")
   The “executeUpdate()” function can be used to send a SQL statement to update the specified database.
2. ☐ True ("T") or False ("F")
   The HTTP protocol is a stateful protocol.
3. ☐ True ("T") or False ("F")
   In JDBC, the user can set a time limit on how long the client can wait for a query to return.
4. ☐ True ("T") or False ("F")
   The JDBC driver for a database should be provided by the vendor of the operating system.
5. ☐ True ("T") or False ("F")
   A query result cursor allows the JDBC client to iterate through the results of a query.

Question 2: (15 points)
GET and POST are two commonly used methods for an HTTP request/response between a client and a server. For each of the following properties, mark the corresponding method(s) with this property (“GET”, “POST”, or “Both”).

<table>
<thead>
<tr>
<th>Property</th>
<th>GET/POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>The request can be cached</td>
<td></td>
</tr>
<tr>
<td>The request should be used when dealing with sensitive data.</td>
<td></td>
</tr>
<tr>
<td>The request has a length restriction.</td>
<td></td>
</tr>
<tr>
<td>The request should be used only to retrieve data.</td>
<td></td>
</tr>
<tr>
<td>The request cannot be bookmarked.</td>
<td></td>
</tr>
</tbody>
</table>

Question 3: (15 points)
In the following table, fill in the “Technique” column using one the three options: JSP, Java Servlet, Javascript

<table>
<thead>
<tr>
<th>Property</th>
<th>Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Java program running on the Tomcat server.</td>
<td></td>
</tr>
<tr>
<td>Combines static HTML text with Java servlet code</td>
<td></td>
</tr>
<tr>
<td>Code running inside a Web browser.</td>
<td></td>
</tr>
</tbody>
</table>
Question 4: (15 points)
List two possible ways to implement pagination in your Fabflix project, as discussed in class. For each of them, discuss its two advantages and two disadvantages.

Question 5: (10 points)
Write down the basic steps for using JDBC to query a DBMS system.

Question 6: (10 points)
Explain how a session in Java servlet is implemented “under the hood” between a Web browser and the Tomcat Web server as discussed in class.

Question 7: (10 points)
Suppose you want to add a “Recently Clicked” feature to your Fabflix project. In other words, you want to enable a user to see a list of movies that he/she has clicked on in the past two months. How do you implement this feature?

Question 8: (10 points)
What is the benefit from enabling MySQL logging?
Question 1: (15 points)

1. ___T___ (3 points)
2. ___F___ (3 points)
3. ___T___ (3 points)
4. ___F___ (3 points)
5. ___T___ (3 points)

Question 2: (15 points)

<table>
<thead>
<tr>
<th>GET/POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET</td>
</tr>
<tr>
<td>POST</td>
</tr>
<tr>
<td>GET</td>
</tr>
<tr>
<td>GET</td>
</tr>
<tr>
<td>POST</td>
</tr>
</tbody>
</table>

Question 3: (15 points)

<table>
<thead>
<tr>
<th>Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java Servlet (5 points)</td>
</tr>
<tr>
<td>JSP          (5 points)</td>
</tr>
<tr>
<td>Javascript   (5 points)</td>
</tr>
</tbody>
</table>

Question 4: (15 points)

Method 1, using SQL "offset limit"; (4 points)
+ Advantages: Less data for each query to retrieve (or up to date data);
  Not much memory needed at the Web server (2 points)
- Disadvantages: More queries to DB; Longer query delay (2 points)

Method 2, using Web session caching to store the results of a single query; (4 points)
+ Advantages: reduces the overhead on the DB server, Increase response time (2 points)
- Disadvantages: Memory needed at the Web server (1 point)

Question 5: (10 points)
(The student is allowed to group some of these steps into one step.)
Load the driver (1.5 points)
Define the Connection URL (1.5 points)
Establish the Connection (1.5 points)
Create a Statement object (1.5 points)
Execute a query (1.5 points)
Process the result (1.5 points)
Close the connection (1 point)

**Question 6:** (10 points)
The first time the browser sends a request to the server (3 points), the server generates a cookie and sends it back to the client (3 points). In each following request, the client needs to attach the cookie to identify itself (4 points).

**Question 7:** (10 points)
The server maintains a table to store all movie clicks of each user (4 points). Each time a user clicks a movie link, the web server program adds a record to the table (3 points). When the web page is accessed, the web server queries the database to get the recent views and display them to the user (3 points).

**Question 8:** (10 points)
The benefit from enabling MySQL logging is to monitor every SQL query that hits the database (5 points), in order to debug and improve the performance (5 points).