

**CS122B Projects in Databases and Web Applications**  
**Department of Computer Science, UC Irvine, Prof. Chen Li**  
**Winter 2017, Quiz 3**

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**Initial Score (out of 100)**

\_\_\_\_\_  
**Name**

\_\_\_\_\_  
**Student ID**

**In accordance with both the letter and spirit of the Honor Code, I have neither given nor received assistance on this examination.**

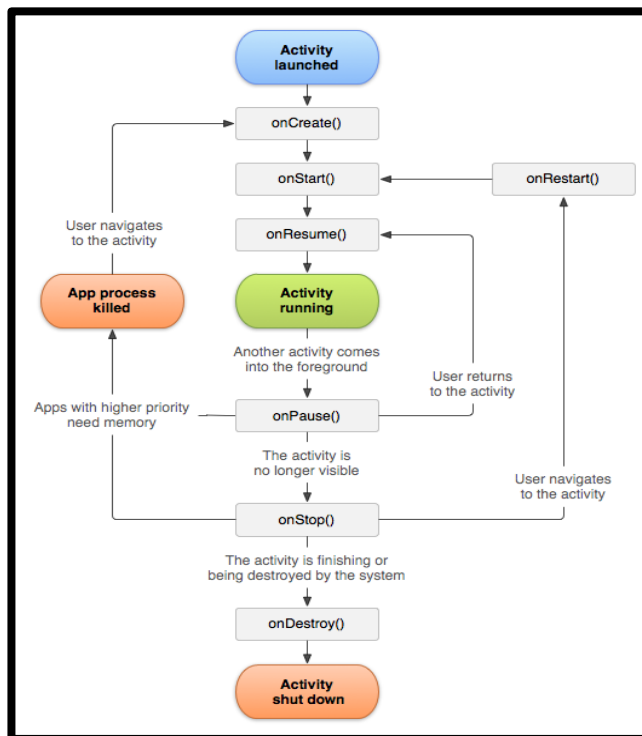
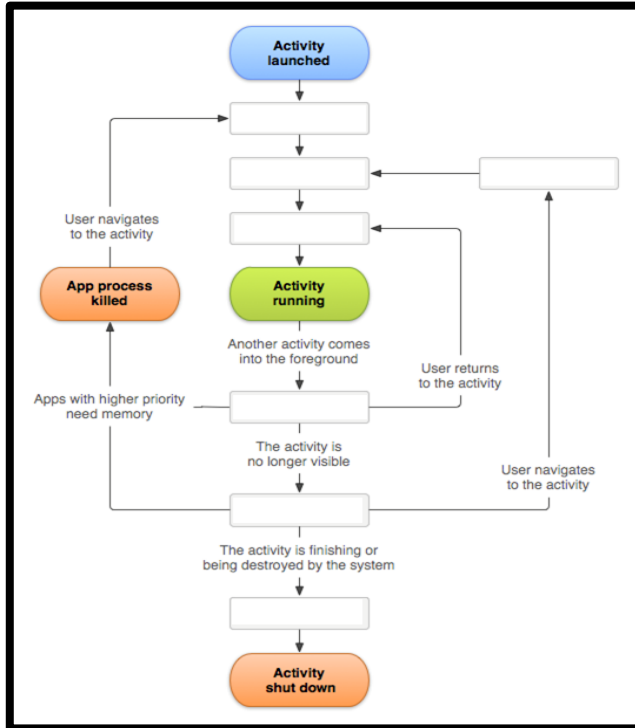
**Signature** \_\_\_\_\_

**Question 1:** (40 points)

For each of the following statements, mark **True ("T")** or **False ("F")**:

1. **T** An Activity is an application component that provides a screen with which users can interact to do some operations, such as dialing the phone, taking a photo, or sending an email.
2. **F** In project 3, turning on "auto-commit()" is one of the optimization techniques that can speedup the process of XML parsing and database population.
3. **T** Edit distance is a function of quantifying how dissimilar two strings are by counting the minimum number of single-character operations required to transform one string into the other.
4. **F**  $d(a, c) \geq d(a, b) + d(b, c)$  is always true, where " $d$ " is the edit distance function, and  $a$ ,  $b$ , and  $c$  are three strings.
5. **T** There is a classic algorithm for computing the edit distance of two strings using dynamic programming.
6. **T** Managing Android's activities properly allows the developer to ensure that user data is not lost during activity transitions.
7. **T** The connection pooling technique can be employed to improve application performance, concurrency, and scalability.
8. **F** Due to limited resources (such as CPU, memory), Android is less likely to choose some activities to kill compared to other desktop operating systems such as Windows or Linux.

**Question 2: (35 points)** The following figure illustrates the loops and the paths an Android activity might take between states. The rectangles represent the callback methods you can implement to perform operations when the activity transitions between states. Fill out the rectangles with correct callback methods.



**Question 3:** (25 points) For each question, select one and only one correct answer.

1. In an Android phone, which of the following statements is **false**?
  - A. It is possible for a paused application to be killed when the system does not have enough memory.
  - B. The programmer of an application can assume that the application is always running in memory even if it is paused.**
  - C. The Android environment allows multiple applications to be running at the background at the same time.
  - D. Android is using SQLite as its backend database.
  
2. Suppose two MySQL instances are connected using the replication technique covered in our lectures. Which of the following statements is true?
  - A. These two instances have identical responsibilities.
  - B. Applications can update any of the two instances and read the changes from the other.
  - C. Applications can read from any of the two instances.**
  - D. The update to every instance can be made visible to the other instance.
  
3. Consider two MySQL instances connected using the replication technique covered in our lectures, one as the master (called “M”) and one as the slave (called “S”). Initially, there is an empty “Person” table with a schema `Person(name varchar(20))`. Now we first insert a record “Mike” into M, then a record “Smith” into S. Executing “select \* from Person” on M and S respectively will return:
  - A. M: Mike, S: Smith;
  - B. M: Mike, Smith, S:Mike, Smith;
  - C. M: Mike, S: Mike, Smith;**
  - D. M: Mike, S: Mike
  
4. In class we discussed how to do load balancing for two Tomcat servers. Which of the following statements is true based on our lecture?
  - A. The load balancer talks to two instances using their public addresses;
  - B. The load balancer has to install a Tomcat server as well;
  - C. The load balancer is running Apache2 accepting requests (port 80 by default);**
  - D. Sticky sessions can be used to make sure one Tomcat instance serves all the requests from all clients.
  
5. Consider the Fabflix website hosted by two Tomcat servers (A and B), which are load balanced by an Apache2 with sticky session enabled. Tom, a fan of movies, visits Fabflix and is initially assigned to server A. Suddenly, Tom’s browser is crashed and all cookies are lost. Now, Tom reopens the Fabflix website, which server will be assigned to handle this request:
  - A. Must be server A;
  - B. Must be server B;
  - C. Can be either server A or server B;**
  - D. Request will be rejected because of missing required cookies.