Quiz 3

_____
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 _____
Make sure to write succinct answers to each question.

Question 1: (24 pts)
For each of the following statements, mark **True ("T")** or **False ("F")**:

1. _____ Most databases support native search.
2. _____ Using a search architecture with a middleware layer such as Lucene/Solr has a disadvantage of keeping two copies of the same data.
3. _____ One of the full-text search challenges is stemming, which tokenizes a string into multiple words.
4. _____ $d(a, c) >= d(a, b) + d(b, c)$ is always true, where "d" is the edit distance function, and a, b, and c are three strings.
5. _____ A user-defined function (UDF) provides a mechanism for extending the functionality of the database server by adding a function that can be implemented in another programming language such as C/C++.
6. _____ Android should not kill a running activity even in the case where the operating system runs out of resources (e.g., CPU, memory).
7. _____ A connection pool is a set of database connections that can be reused by different requests.
8. _____ JMeter can be used to simulate a heavy workload to a Web server to test its reliability and performance.

Question 2: (14 pts)
Build an inverted index based on the three documents below. Sort items in alphabetical order.
    doc 1: The cat ran.
    doc 2: David wore the hat.
    doc 3: David caught the cat.

Question 3: (12 pts)
Suppose two MySQL instances are connected using the replication technique covered in our lectures. Mark T(true) or F (false) for each of the following statements.
1. _____ These two instances have different responsibilities.
2. _____ Applications can update any of the two instances and read the changes from the other.
3. _____ Applications can read from any of the two instances.
4. _____ An update to every instance can be made visible to the other instance.

Question 4: (16 pts)
Briefly explain each of the following Android activity states.
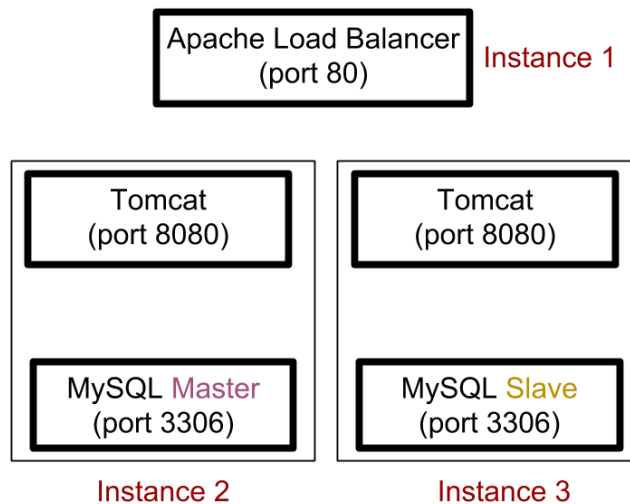
ACTIVE   _____

PAUSED   _____

STOPPED   _____

FINISH   _____

Question 5: (10 pts)
Finish the following diagram for the Fabflix project 5 by adding links between the modules and the corresponding Read/Write operations.

Question 6: (12 pts)
Briefly explain the meaning of "Sticky session" in the load balancer used in project 5.

Question 7: (12 pts)
Ajax stands for "Asynchronous JavaScript And XML." Briefly explain the meaning of each of the words:
- Asynchronous

- JavaScript

- XML

Quiz 3

Question 1:
T T F F T F T T

Question 2:
cat: 1,3
caught: 3
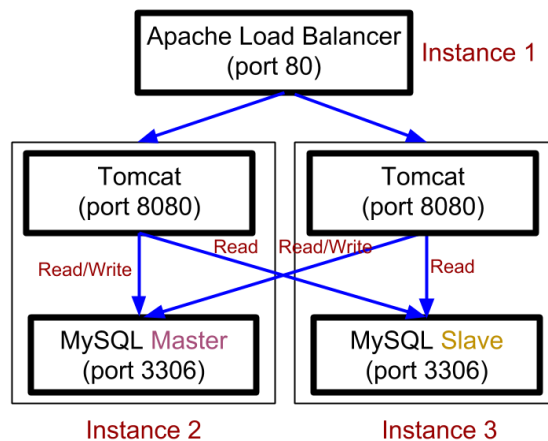david: 2,3
hat: 2
ran: 1
the: 1,2,3
wore: 2

Question 3:
T F T F

Question 4:
STOPPED: The activity is completely hid by another activity and it is no longer visible to the user.
ACTIVE: The activity is in the foreground of the screen.
PAUSED: The activity has lost focus but is still visible and alive.
FINISH: The system drops the activity from memory by killing its process.

Question 5:

```
        ┌─────────────────────────┐
        │  Apache Load Balancer   │   Instance 1
        │       (port 80)         │
        └─────────────────────────┘
           ↙                 ↘
  ┌──────────────────┐  ┌──────────────────┐
  │     Tomcat       │  │     Tomcat       │
  │   (port 8080)    │  │   (port 8080)    │
  └──────────────────┘  └──────────────────┘
        Read   Read/Write       Read
  Read/Write ↘        ↘      ↓
  ┌──────────────────┐  ┌──────────────────┐
  │  MySQL Master    │  │  MySQL Slave     │
  │   (port 3306)    │  │   (port 3306)    │
  └──────────────────┘  └──────────────────┘
     Instance 2            Instance 3
```

Question 6:
It is a persist session over several requests of the same client

Question 7:
Asynchronous: callback functions when the event occur
Javascript: programming language
XML: DOM-based structure object