CS 464/564 Spring 2021 Quiz 3 **Name:** Ethan Booker

1. Create a trigger that fires when a new row is added to the loan table. The trigger makes sure the copynum in the row is not a copynum of a copy that is currently checked-out. A copy is checked-out if there is a row in loan for the copy in which the ret (return date) value is null.

```
CREATE OR REPLACE FUNCTION checkCheckedOutCopy()
RETURNS TRIGGER AS $$
DECLARE
BEGIN
      IF EXISTS (SELECT * FROM loan WHERE copynum = NEW.copynum AND ret IS NULL) THEN
          RAISE EXCEPTION 'copynum % is checked out', NEW.copynum;
      END IF;
      RETURN NEW;
END;
$$ LANGUAGE plpgsql;

CREATE TRIGGER checkCopynum  BEFORE INSERT ON loan
       FOR EACH ROW EXECUTE PROCEDURE checkCheckedOutCopy();
```

2. Write a trigger called checkCapacity. The trigger is called when the capacity column in the Library table is changed. The trigger checks that the new capacity is greater than or equal to the number of copies currently housed in the library. If the new capacity is greater than or equal to the number of copies housed in the library the new row is returned (the update happens) otherwise an exception is raised and the update fails.

```
CREATE OR REPLACE FUNCTION checkLibraryCapacity()
RETURNS TRIGGER AS $$
DECLARE
      total_copies integer;
BEGIN
      SELECT COUNT(copynum) INTO total_copies
      FROM copy
      WHERE copy.libnum = NEW.libnum;

       IF NEW.capacity < total_copies THEN
          RAISE EXCEPTION 'new library capacity is less than the current total copies housed';
       END IF;
       RETURN NEW;
END;
$$ LANGUAGE plpgsql;

CREATE TRIGGER checkCapacity BEFORE UPDATE OF capacity ON library
       FOR EACH ROW EXECUTE PROCEDURE checkLibraryCapacity();
```