**Scenario**: You have been tasked to create a database for a company that specializes in experimental drug studies for pharmaceutical companies. These drug studies help to get the drugs FDA approved for going to market. The studies are double blind meaning the patient and the doctor both do not know whether the patient is on active or placebo drug.

The front-end information will be gathered by phone, app or web site and passed to your database. You only have to handle the data and record it in the proper tables.

Your database will handle 2 studies being conducted simultaneously for the same pharmaceutical company, Acme Pharmaceuticals. The study identifiers will be 12345 and 54321. Study 12345 will use a random pick list for assigning treatment to patients. This means the random codes will be distributed by going down the list in sequential order. Study 54321 will use a random generator to assign treatment but each treatment, active and placebo, cannot outnumber the other by more than 2 patients. IE if there are 6 patients on active and 4 on placebo the next patient must be put on placebo so the numbers are 6 and 5. If the random generator picks active in this case the numbers would go to 7 and 4 which is more than 2.

Each study will have 3 sites in which patients can be enrolled. The site data collected will be Site Number (3-digit pre-assigned code), Name (Doctor or Hospital name), Address, City, State, Zip, phone number

The following information must be stored for both studies. For patients, the Patient Number (this will be a 6-digit number in the site number-sequential format, IE first patient from site 251 will be 251001, 2nd will be 251002, etc.), DOB, Gender, Weight will be collected.

The visits for both studies will be as follows: The Doctor will perform testing on the patient (Screening). When the test results are returned, if they are positive the patient can continue in the study (Randomization), or if test results are negative they will be removed from the study (Withdrawal).

1. Screening
   1. At Screening, the following data will be inserted into the DB. Patient Number (site number – sequential from above), DOB, Gender and Weight in lbs. will be collected along with a visit date-does not have to be current date.
2. Randomization
   1. At Randomization, a Randomization number will be associated with the patient per the study guidelines above. The visit date will be recorded as the current date. A drug kit of the correct type (active or placebo based on the randomization treatment) will also be assigned at this visit and associated with the visit.
3. Withdrawal
   1. At Withdrawal, a visit date and withdrawal reason will be collected for the patient. The visit date does not have to be the current date but must be after the prior visit whether it was screening or randomization.

Now that you have all of the tables and data you need, here are the instructions for the rest of the project.

1. Create a **single SQL script** with the tables, PK’s, FK’s, inserts for the data provided in the Excel spreadsheet and the following views and stored procedures, at a minimum. **(The following views are for you to use in your stored procedures.)**
2. Create the view that will show all patients at all sites for both studies. You can do this together or 1 view for each study.
3. Create the view that will show all randomized patients, their site and their treatment for both studies. You can do this together or 1 view for each study.
4. Create the view that will show the next available random codes (MIN) for both studies. This should be 2 separate views as the first study only gets the next ID and the second study needs the next ID for each treatment.
5. Create the view that will show all available drug at all sites for both studies. You can do this together or 1 view for each study.
6. Create the view that will show all withdrawn patients, their site, withdrawal date and withdrawal reason for both studies.
7. Create other views and functions as needed. Put as much as possible into views and functions so you are pulling from them instead of from tables.
8. Create the stored procedure(s) that will screen a patient for both studies. You can do this together or 1 for each study.
9. Create the stored procedure(s) that will withdraw a patient for both studies. You can do this together or 1 for each study. Remember a patient can go from Screening Visit to Withdrawal without being randomized. This will be up to the Doctor. Your code just has to be able to do it.
10. Create the stored procedure(s) that will randomize a patient for both studies. You can do this together or 1 for each study.
    1. This will include a stored procedure for obtaining a random code as well as a drug kit.
11. The last item on the list is the calls to the stored procedures. You need to provide these on a SEPARATE .sql file called CallsToStoredProcs.sql. Remember when you run the script to Create a stored procedure, it can be called from anywhere. Don’t let this trip you up. You are “Executing” what you created in the first script. Don’t comment anything out in script #2 just run the first script, then run the 2nd script and there should be no errors and data should be entered into the correct tables. In the CallsToStoredProcs.sql script, you will have the following calls to your stored procs.
    * 1. 8 patients for each study for screening.
      2. 5 patients randomized for each study. (including assigning drug kit)
      3. 4 patients (2 randomized and 2 not randomized patients) withdrawn from each study.
      4. These calls are like what you did in the stored procedures assignment.

DECLARE @intPatientID AS INTEGER = 0;

EXECUTE uspAddPatient @intPatientID OUTPUT, 111001, 2, '1/1/1962', 2, 205

Here are some hints that will hopefully help you create this database.

* 1. There are several intrinsic functions within SQL Server you should take advantage of. MIN, MAX, COUNT, RANDOM, CASE WHEN THEN, others as needed.
  2. When writing your stored procedures use Cursors to pull data needed. IE if you need to know which study a patient is in so you pull the correct random code. Use something like this

DECLARE @StudyID as INT

Begin

DECLARE StudyCursor CURSOR LOCAL FOR

SELECT StudyID FROM V\_PATIENT\_STUDY

WHERE PatientID = @intPatientID

OPEN StudyCursor

FETCH FROM StudyCursor

INTO @StudyID

End

* 1. When you pull any random code or drug kit, for either study, always use the lowest number available that matches the criteria you need. This should be handled in #4 and #5 above.
  2. One way to get the random code for study 54321 is to use RAND() and generate a number between 1 and 0. Then if it is <= .5 make it Placebo. If it is > .5 make it Active. This is not easy but there is a lot of information available if you search for random number generators in SQL Server.
  3. I want you to do this project as if you are an actual employee so use whatever resources you have available, except other people. This is your own project and you should **not be getting help from others**. If you have questions, please email your instructor.

**Grading**:

Steps 1 – 9 are worth 45 points. (5 pts. Each)

Step 10 is worth 45 points.

Step 11 is worth 10 points but must be completed to be able to grade Steps 1-10.