SOFTWARE SYSTEM DEVELOPMENT - Monsoon – 2024
Assignment 1 – Shell Programming & SQL
Submission Due Date: 2 September 2024, 08:00 AM

IMPORTANT INSTRUCTIONS

1. This assignment is an individual submission, **NOT** a group activity.
2. Total Marks of the assignment is 100 with duration of 3 weeks.
3. Inputs/output should fit the criteria mentioned in respective questions. Unless it is specified, all input/output criteria are open to interpretation.
4. Evaluation will be conducted based on a fixed grading rubric (syntax, logic, input and output) and the marks are divided as per prescribed weightage in respective question.
5. For queries, please share your queries via Moodle.
6. Please follow the submission instructions carefully.
7. Submissions should be done via Moodle only.

Q1: Using the list of quotes by famous personalities from the quotes.txt here -
https://gist.github.com/sai11101989/bcf9376201a363807fb4daa2ce778b14 Perform the following using a single SHELL script. (Total: 20 Marks)

a. Remove empty lines and generate a quotes_empty.txt file. **(5 Marks)**
b. Remove duplicates and generate a quotes_rdup.txt file. **(5 Marks)**
c. Count number of quotes by personality and print them in quotes_byperson.txt file **(5 Marks)**
d. List all the words in the file that starts with 's' and doesn't follow by 'a' **(5 Marks)**

Q2: Using a SHELL Script, create a Password generator that satisfies below conditions (Total: 20 Marks)

a. Generate a password with length not less than 8 characters and not more than 10 characters with at least one Captial English alphabet, at least one small English at least and at least one symbol among %&#$@()! **(5 Marks)**
b. Generate an account number for banks with length not less than 12 characters and not more than 14 characters containing only numbers i.e [0-9] without repetition. The first character of the account number should not be zero. The account number should **not** form a Fibonacci series in any part of the overall string. The account number should **not** have a repeated number for more than 3 times i.e. it should have 666 or 555 in any part of the account number (**15 Marks**)

Q3: Write a SHELL script which does the following (Total: 10 Marks)

a. When the script is executed from the current directory, it should print all the directories ONLY present in its current directory (**5 Marks**)
b. The output should sort the directory listing by size in increasing order (**5 Marks**)

Additional Notes: Size of the directory should be in human readable form and in any form i.e., in Bytes/MB/KB/GB. Columns should be tab separated. Output should only display the absolute directory name and its size. Path of the directory should not be displayed.

Expected Input: No inputs are required to be passed via script
Expected Output:

Directory1_Name <size_name>
Directory2_Name <size_name>
Directory3_Name <size_name>

Q4: Write a single SHELL Script which does the following: (Total: 10 Marks)

   a. Create a directory **temp_activity**
   b. Inside this directory, create files **temp<i>.sh**, substitute <i> with numbers from 1 to 50. Thus, you'll have 50 files with names temp1.sh, temp2.sh, … Achieve this with a single command without loop. (**5 Marks**)
   c. Change the extensions of files from temp1 to temp25 from sh to txt (**5 Marks**)
      Additional Note: All the requirements should be addressed via single SHELL script ONLY.

Q5: Import data from empdetails.csv file into a table called "Person" with EmpID as primarykey in your local mysql database. Use Source Files: empdetails.csv (https://github.com/vranonymous/data/blob/main/empdetails.csv) to answer this question. Write the following stored procedure(s) using SQL to perform tasks as listed below: (Total: 40 Marks)

   a. Create a table called "hike2024" with columns **{HikePK, EmpIDFK, FirstName, LastName, Gender, WeightInKg, LastHike, LastSalary, NewHike, NewSalary}** with respective reasonable datatypes. Populate NewHike, NewSalary columns using your stored procedure with employee information whose weight is less than 55kg only. NewHike column should be populated with 12% increase to LastHike and recalculate the NewSalary using LastSalary column based on the hike percentage. Re-running the stored procedure should delete the data from existing hike2024 table and should repopulate the hike2024 table. **(10 Marks)**

Example: If Sai Anirudh's weight is 53kg, LastHike is 10% and LastSalary is 300000, then the NewHike is 22% and New Salary is 366000.

   b. Create a table called "**PersonJoining**" with columns **{PJoinPK, EmpIDFK, FirstName, LastName, DateofBirth, Age, DateofJoining, DayofJoining, MonthofJoining, YearofJoining, WorkExpinDays}** with respective reasonable datatypes. Populate DayofJoining, MonthofJoining, YearofJoining, WorkExp columns using your stored procedure with employee information. Re-running the

stored procedure should delete the data from existing PersonJoining table and should repopulate the PersonJoining table. **(10 Marks)**

Example: If Sai Anirudh's DateofJoining is 10-10-2011, then DayofJoining is 10, MonthofJoining is October, YearofJoining is 2011 and WorkExp is 3945 days.

c. Create a table called "PersonTransfer" with columns **{PTPK, EmpIDFK, FirstName, LastName, Gender, DateofJoining, CurrentRegion, NewRegion}** with respective reasonable datatypes. Populate NewRegion column to "DC" using your stored procedure for employees with Gender "F" whose Work Experience is more than 10 years. Populate the NewRegion column to "Capitol" using the same stored procedure for employees with Gender "M" whose Work Experience is more than 20 years. Re-running the stored procedure should delete the data from existing PersonTransfer table and should repopulate the PersonTransfer table. **(10 Marks)**

Example: If Sai Anirudh's Gender is "M" and his Work Experience is more than 20 years, update his NewRegion entry to "Capitol".

d. By using the Person table, write a SQL query to display data in the following format. **(10 Marks)**

EmployeeRegion	No. Of Employee born between 00:00 hours to 09:00 hours	No. Of Employee born between 09.01 hours to 16.00 hours	No. Of Employees born after 16:01 hours until 22:59 hours
Region_1	Values	Values	Values
Region_2	Values	Values	Values

SUBMISSION INSTRUCTIONS

1. Please answer the above questions by following the question carefully.
2. You will have to submit your assignment as follows <RollNumber>_A1.zip. For example, if your roll number is 20162153, then your submission file should be 20162153_A1.zip
3. This ZIP should contain 4 folders, Q1, Q2, Q3, Q4, Q5 with each folder containing scripts and any supporting files associated with these questions inside them.
4. We conduct a plagiarism check. If found, we will award ZERO for copy cases. Thus, please make a genuine effort to complete the assignment.