AMITY INTERNATIONAL SCHOOL
PRACTICAL LIST 2019-20
CLASS XII
COMPUTER SCIENCE (Python)

1) A website requires the users to input username and password to register. You have to write a program to check the validity of password input by users based on the following criteria. Take in a list of passwords.

Following are the criteria for checking the password:
1. At least 1 letter between [a-z]
2. At least 1 number between [0-9]
3. At least 1 letter between [A-Z]
4. At least 1 character from [$#@]

If the following string of passwords are given as input to the program:
ABd1234@1,a F1#,2w3E*,2We3345
Then, the output of the program should be:
Valid Password is - ABd1234@1

2) Write a program to input a number and then call the functions

count(n) which returns the number of digits
reverse(n) which returns the reverse of a number
hasdigit(n) which returns True if the number has a digit else False
show(n) to show the number as sum of place values of the digits of the number.
(eg 124 = 100 + 20 + 4)

3) A Number is a perfect number if the sum of all the factors of the number (including 1) excluding itself is equal to number.

For example: 6 = 1+2+3 and 28=1+2+4+7+14
Number is a prime number if it 's factors are 1 and itself.
Write functions i) Generatefactors() to populate a list of factors
ii) isPrimeNo() to check whether the number is prime number or not
iii) isPerfectNo() to check whether the number is perfect number or not

Save the above as a module perfect.py and use in the program main.py as a menu driven program.

4) Pascal's triangle is a number triangle with numbers arranged in staggered rows such that
$nr=n!/r!(n-r)!$
This equation is the equation for a binomial coefficient.
Write a UDF and a Recursive function in Python to print the Pascal Triangle

5) Data can be represented in memory in different ways Binary, Decimal, Octal, and Hexadecimal. Input number in decimal and desired type (Specify B for Binary, O for Octal, H for Hexadecimal) for output.

c) Display last line of file.
d) Display first line from 10th character onwards.
e) Read and display a line from the file. Ask user to provide the line number to be read.
f) Find the frequency of words beginning with every letter i.e.
(for the above example)
Words beginning with a: 5
Words beginning with n: 2
Words beginning with p: 2
Words beginning with o: 5 and so on

13) Assume that a text file named file1.txt contains some text, write a function named isvowel( ) that reads the file file1.txt and creates a new file named file2.txt, which shall contain only those words from the file file1.txt which don't start with a vowel
For example, if the file1.txt contains:
Carry Umbrella and Overcoat When it Rains
Then the file file2.txt shall contain
Carry When Rains

14) A file containing data about a collection of students has the following format.
Rajat Sen 12345 1 CSEE
Jagat Narain 13467 3 CSEE
Anu Sharma 11756 2 Biology
SumitaTrikha 23451 4 Biology
SumderKumra 11234 3 MME
KantiBhushan 23211 3 CSEE
Each line contains a first name, a second name, a registration number, no of years and a department separated by tabs.
a) Write a Python program that will copy the contents of the file into a list of tuples
b) Display full details of the student sorted by registration number
- The names of all students with no of year less than 3
- The number of people in each department

15) Write is a program that reads a file"myfile.txt" and builds a histogram (a dictionary having key value pair as word: occurrence) of the words in the file.
a) Now use histogram to print
i) Total number of words
ii) Number of different words
iii) The most common words
b) Using above text file "myfile.txt", write a program that maps a list of words read from the file to an integer representing the length of the corresponding words.(use dictionary having key value pair as length : list of word)
Now using above dictionary design a function find_longest_word() to display a list of longest words from file.
Define a function filter_long_words(n) that takes an integer n and returns the list of words that are longer than n from file.

20) Create a Django app to create a calculator, for addition, subtraction, multiplication, and division

21) Write a python program with Django, Connect the database, take username and details, store them in the database. If another user gives same details, render a new HTML page and show user is already existing.

DATABASE MANAGEMENT (MySQL +Python)

1. Consider the following TEACHER and SALARY table and Write the command in MYSQL for (i) to (v):

Table: TEACHER

SID	NAME	DEPT	Gender	EXPERIENCE
101	Siddharth	Computer	M	12
104	Raghav	Physics	M	5
107	Naman	Chemistry	M	10
114	Nupur	Computer	F	3
109	Janvi	Physics	F	9
105	Rama	Accounts	M	10
117	James	Computer	F	3
111	Binoy	Accounts	F	12
130	Samuel	Computer	M	15

Table: SALARY

SID	BASIC	ALLOWANCE	DA
101	12000	1000	300
104	23000	2300	500
107	32000	4000	500
114	12000	5200	1000
109	42000	1700	200
105	18900	1690	300
130	21700	2600	300

i. Display NAME and DA of all staff who are in Accounts department and having more than 10 years of experience and DA is more than 300.

ii. Display the NAME, SID and basic of all staff working in physics department.

iii. Increase the experience of computer dept by 2 years.

iv. Display maximum and minimum Basic Salary from the SALARY table.

v. Delete Salary table

i) Create the table ITEM in the mydb database

ii) Create a menu driven program in python to have

a) function for inserting records in the table

b) function for displaying all the records from the table item

c) function for searching for a particular record on basis of Itemcode

4. Create a Table "STUDENT" in MySQL with the following attributes.

Table: STUDENT

ColumnName	Datatype	Size	Constraint
RollNo	Number		Primary Key
Name	Varchar	30	Not Null
Class	Number		
DOB	Date		
Gender	Varchar	2	

i) Create a menu driven program in Python for the user to enter the details and save the data in MySQL table

ii) Allow the user to update the details for a particular rollno and ensure the changes have been made in the table student.

5. Create a Table "BUS" in MySQL with the following attributes.

Table: BUS

ColumnName	Datatype	Constraint
BusNo	Number	Primary Key
Origin	Varchar	
Dest	Varchar	
Rate	Number	
Km	Number	

Now build a connection with Python to add a new record and Display the details in above table. Use Tkinter to create the front end.