

PUSASQF405
APPLICATIONS OF IT - BASICS OF PYTHON

Time: 2 hours
Total Marks: 60

Note:

1. The candidate has the option to either question 3A or question 3B. Rest all questions are mandatory.
2. Numbers to the right indicate full marks.
3. The candidates will be provided with the formula sheet and graphs (if required) for the examination.
4. Use of approved scientific calculators is allowed.

Q1. Attempt All questions.

A. Write a python program to check if a string is palindrome using a function **5 Marks.**

B. Write a program in python to calculate the interest earned by a customer. from the bank after depositing a principal amount for 5 years. Take input. from the customer for principal amount and the interest provided by the the bank was at 8%.
(Formula: $\text{principal_amount} \times \text{intrest_rate} \times \text{years}$) **5 Marks**

C. Create a dataframe 2 dataframes, one for customers and another for financial details. Store them in df1 and df2. Split the data based on condition. Transaction type and merge the data based on name and on withdrawals data post-split. **5 Marks**

customer_details:

```
data = {  
    "Name": ["Alice", "Bob", "Charlie", "David"],  
    "Age": [30, 40, 25, 50],  
    "Gender": ["F", "M", "M", "M"],  
    "City": ["New York", "Los Angeles", "Chicago", "Houston"]  
}
```

finance_details:

```
data = {  
    "Name": ["Alice", "Charlie", "David", "Bob", "Alice", "David"],  
    "TransactionDate": ["2022-01-01", "2022-01-02", "2022-01-03",  
        "2022-01-04", "2022-01-05", "2022-01-06"],  
    "TransactionType": ["Deposit", "Withdrawal", "Deposit", "Withdrawal",  
        "Deposit", "Withdrawal"],  
    "Amount": [1000, 500, 2000, 1000, 1500, 750]
```

}

Q2. Attempt All questions.

A. Generate a python list of all perfect square numbers between 20 to 1000 **5 Marks.**

B. Write a program to print list containing the running addition of the below.
list
input_list = [1,19,11,30,28,40]

Hint: Running multiplication = current_item*previous_multiplication **5 Marks**

C. Write a program in python to print the most repeated and second most repeated alphabet from the below list.

input_list = ['a','b','1','2','2','3','4','a','a','a','a'] **5 Marks**

Q3. Attempt question 3A or question 3B.

- A.** Load the advertising.csv dataset. The dataset contains information about advertising budget and sales. Predict the sales based on advertising budget. using linear regression.

30 Marks

- a. Read the dataset and split the data in X and Y.
 - i. X should contain everything except the sales column (3)
 - ii. Y should contain sales column (3)
- b. Perform train-test split with test ratio 20% (6)
- c. Perform Linear Regression on train dataset. (6)
- d. Predict the values on Test dataset. (6)
- e. Provide the value for RMSE. (6)

OR

- B.** Load the breastcancer.csv dataset. The dataset contains medical information. about patients based on various characteristics in the dataset, predict whether. there are any chances for a patient to have breast cancer or not. Predict using. Logistic Regression.

30 Marks

- a. Read the dataset. (2)
- b. Convert the categorical column diagnosis M = 1 and B = 0 using label encoding method (5)
- c. While running the logistic regression model, a warning or an error can be observed, Run the below code: (5)

```
from sklearn.exceptions import ConvergenceWarning
Import warnings.
# Ignore the ConvergenceWarning
warnings.filterwarnings("ignore", category=ConvergenceWarning)
```
- d. Create a train-test split with 20% test ratio. (7)
- e. Run the Logistic Regression model. (5)
- f. Predict values for test dataset. (3)

g. Provide the Accuracy Score

(3)

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