Problem solving using Python Programming
I B.Tech I Sem
Lab Assignment Questions

Section: E2, J2

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1. Develop a program that reads integer number and prints whether it's positive, negative, or zero using if-elif-else statements.

    Program:

    ```python
    # Read a number from the user
    number = int(input("Enter a number: "))
    # Check if the number is positive, negative, or zero
    if number > 0:
        print("Positive")
    elif number < 0:
        print("Negative")
    else:
        print("Zero")
    ```

    Output:

    ```
    Enter a number: 45
    Positive

    Enter a number: -3
    Negative

    Enter a number: 0
    Zero
    ```

2. Design a Python program that takes two numbers as input and identifies the maximum number among them. For instance, if the input is 45 and 67, the program should output "67 is the maximum number."

    Program

    ```python
    # Read two numbers from the user
    num1 = int(input("Enter the first number: "))
    num2 = int(input("Enter the second number: "))

    # Identify the maximum number
    if num1 > num2:
        max_number = num1
    else:
        max_number = num2

    print(max_number,"is the maximum number.")
    ```
    ```
    Enter the first number: 45
    Enter the second number: 56
    56 is the maximum number.
    ```

3. Develop a Python program that takes a day number as input and calculates the corresponding day of the week, assuming Monday as the first day. For example, if the day number is 1, the program should output "Monday," for day number 2, it should output "Tuesday," and so on.

Program

```python
# Read the day number from the user
day_number = int(input("Enter the day number (1-7): "))
# Calculate the corresponding day of the week
if day_number == 1:
    day = "Monday"
elif day_number == 2:
    day = "Tuesday"
elif day_number == 3:
    day = "Wednesday"
elif day_number == 4:
    day = "Thursday"
elif day_number == 5:
    day = "Friday"
elif day_number == 6:
    day = "Saturday"
elif day_number == 7:
    day = "Sunday"
else:
    day = "Invalid day number"
print("The corresponding day of the week is: ",day)
```

```
Enter the day number (1-7): 5
The corresponding day of the week is:  Friday
```

4. Write a Python program that calculates discounts based on different ranges of the bill amount? The program should read the bill amount, and then determine the appropriate discount percentage: 10% if the amount is between 1000 and 2000 (inclusive), 20% if the amount is between 2000 and 5000 (inclusive), and 30% if the amount is 5000 or more. Finally, the program should display the bill amount, the calculated discount amount, and the applied discount percentage.

Program

```python
# Read the bill amount from the user
bill_amount = float(input("Enter the bill amount: "))
# Calculate discount based on different ranges of bill amount
if 1000 <= bill_amount <= 2000:
    discount_percentage = 10
elif 2000 < bill_amount <= 5000:
    discount_percentage = 20
elif bill_amount > 5000:
    discount_percentage = 30
else:
    discount_percentage = 0
# Calculate discount amount
discount_amount = (discount_percentage / 100) * bill_amount
# Display results
print("Bill Amount: ",bill_amount)
print("Discount Amount: ",round(discount_amount))
print("Applied Discount Percentage",discount_percentage)
```

```
Enter the bill amount: 2001
Bill Amount:   2001.0
Discount Amount:   400
Applied Discount Percentage 20
```

5. **Create a program that assigns grades to students based on their marks according to the following criteria:**

    a. Marks 90 and above: Grade O (Outstanding)

    b. Marks 80 to 89: Grade A (Excellent)

    c. Marks 70 to 79: Grade B (Good)

    d. Marks 60 to 69: Grade C (Satisfactory)

    e. Marks 40 to 59: Grade D (Acceptable)

    f. Marks below 40 : Grade F (Fail)

Program

```python
# Read the marks from the user
marks = int(input("Enter the marks: "))
# Assign grades based on marks
if marks >= 90:
    grade = "O (Outstanding)"
elif 80 <= marks < 90:
    grade = "A (Excellent)"
elif 70 <= marks < 80:
    grade = "B (Good)"
elif 60 <= marks < 70:
    grade = "C (Satisfactory)"
elif 40 <= marks < 60:
    grade = "D (Acceptable)"
else:
    grade = "F (Fail)"

# Display the assigned grade
print("The grade assigned for the marks ",marks,"is: ",grade)
```

```
Enter the marks: 78
The grade assigned for the marks  78 is:  B (Good)
```

6. **Develop a program that predicts a person's Telugu zodiac sign based on the month of their birth. (using match) Consider following information:**

    a. Mesha (Aries) corresponds to the month of April.

    b. Vrishabha (Taurus) corresponds to the month of May.

    c. Mithuna (Gemini) corresponds to the month of June.

    d. Karkataka (Cancer) corresponds to the month of July.

    e. Simha (Leo) corresponds to the month of August.

    f. Kanya (Virgo) corresponds to the month of September.

    g. Tula (Libra) corresponds to the month of October.

    h. Vrishchika (Scorpio) corresponds to the month of November.

    i. Dhanu (Sagittarius) corresponds to the month of December.

    j. Makara (Capricorn) corresponds to the month of January.

    k. Kumbha (Aquarius) corresponds to the month of February.

    l. Meena (Pisces) corresponds to the month of March.

Program

```
# Read the birth month from the user
birth_month = input("Enter the Birth Month Name:  ")
birth_month = birth_month.capitalize()
# Determine and display the Telugu zodiac sign
match birth_month :
  case "April":
    print("The Telugu zodiac sign corresponding to April is Mesha (Aries).")
  case "May":
    print("The Telugu zodiac sign corresponding to May is Vrishabha (Taurus).")
  case "June":
    print("The Telugu zodiac sign corresponding to June is Mithuna (Gemini).")
  case "July":
    print("The Telugu zodiac sign corresponding to July is Karkataka (Cancer).")
  case  "August":
    print("The Telugu zodiac sign corresponding to August is Simha (Leo).")
  case "September":
    print("The Telugu zodiac sign corresponding to September is Kanya (Virgo).")
  case "October":
    print("The Telugu zodiac sign corresponding to October is Tula (Libra).")
  case  "November":
    print("The Telugu zodiac sign corresponding to November is Vrishchika (Scorpio).")
  case  "December":
    print("The Telugu zodiac sign corresponding to December is Dhanu (Sagittarius).")
  case "January":
    print("The Telugu zodiac sign corresponding to January is Makara (Capricorn).")
  case "February":
    print("The Telugu zodiac sign corresponding to February is Kumbha (Aquarius).")
  case "March":
    print("The Telugu zodiac sign corresponding to March is Meena (Pisces).")
```

```
      case _ :
        print ("Invalid Month Name entered.")
```

```
Enter the birth month :  may
The Telugu zodiac sign corresponding to May is Vrishabha (Taurus).
```

7. Develop a Python program that identifies and prints all palindrome numbers within the range of 1 to 50. A palindrome number reads the same backward as forward, like 11, 22, 33, and so on.

Program

```python
print("Palindrome numbers in the range of 1 to 50:")
for num in range(1, 51):
    if str(num) == str(num)[::-1]:
        print(num , end = " ")
```

```
Palindrome numbers in the range of 1 to 50:
1 2 3 4 5 6 7 8 9 11 22 33 44
```

8. Develop a Python program that prompts the user to enter the desired number of rows for the pyramid and then generates the pattern as described below

```
Enter the number of rows for the pyramid: 8
        1
       2 2
      3 3 3
     4 4 4 4
    5 5 5 5 5
   6 6 6 6 6 6
  7 7 7 7 7 7 7
 8 8 8 8 8 8 8 8
```

Program:

```python
rows = int(input("Enter the number of rows for the pyramid: "))
for i in range(1, rows + 1):
    print(' '* (rows -i) ,end=" ")
    for j in range(1,i+1):
        print(i,end =" ")
    print()
```

9. **Convert Number to Words Using Conditional Statements:** Write a Python program that converts a given number into its word format using conditional statements (if-else). The program should take a number as input from the user and then display the number in its word format (e.g., "765" becomes "Seven Six Five") using the provided word equivalents for digits

Program

```
number = int(input("Enter number to convert into word : "))
word_format = ""
for digit in str(number):
    if digit == '0':
        word_format += 'Zero' + " "
    elif digit == '1':
        word_format += 'One' + " "
    elif digit == '2':
        word_format += 'Two' + " "
    elif digit == '3':
        word_format += 'Three' + " "
    elif digit == '4':
        word_format += 'Four' + " "
    elif digit == '5':
        word_format += 'Five' + " "
    elif digit == '6':
        word_format += 'Six' + " "
    elif digit == '7':
        word_format += 'Seven' + " "
    elif digit == '8':
        word_format += 'Eight' + " "
    elif digit == '9':
        word_format += 'Nine' + " "
print("Word Format : ",word_format)
```

Output :

```
Enter number to convert into word : 798
Word Format :  Seven Nine Eight
```