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Department of Computer Technology

Session 2021-22

III Semester

Practical list: Python Lab (CT2206)

1. Introduction to Python language and

Installation of Python

write a Python program to implement arithmetic, logical operators

2. Write a program using conditional structure if-else, if-elif *etc.*

a) Python Program to Check if a person whose age is received, is a voter or not
b) Python Program to Check Leap Year/Odd-even number

3. Write a program using loops

a)Python Program to Print numbers in word format in an Interval

b)Python Program to Print whether a student result for a course is Pass or Fail based on attendance and marks in that course

Assignment: Write a Python program to assign grades to students at the end of the year. The program must do the following:

1. Ask for a student number.
2. Ask for the student's tutorial mark.
3. Ask for the student's test mark.
4. Calculate whether the student's average so far is high enough for the student to be permitted to write the examination. If the average (mean) of the tutorial and test marks is lower than 40%, the student should automatically get an F grade, and the program should print the grade and exit without performing the following steps.
5. Ask for the student's examination mark.
6. Calculate the student's final mark. The tutorial and test marks should count for 25% of the final mark each, and the final examination should count for the remaining 50%.
7. Calculate and print the student's grade, according to the following table:

4. Write a program using functions

a) Python Program to Find Factorial of Number

b) Python Program to Find Sum of Natural Numbers Using Recursion

5.Write a program using list

a) Write a Python program to get the smallest number from a list.

b) Write a Python program remove duplicated elements from list

6. Write a program using string

6a.Write a Python program to count the number of strings where the string length is 2 or more and the first and last character are same from a given list of strings.

Sample List : ['abc', 'xyz', 'aba', '1221'] Expected Result : 2

7. Write a program using string tuple & dictionaries

7a. Write a program to sort a tuple by its float element.

Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')]
Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]

7b.Write a program to concatenate following dictionaries to create a new one

Sample Dictionary :
dic1={1:10, 2:20}
dic2={3:30, 4:40}
dic3={5:50,6:60}
Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}

7c. Write a Python script to generate and print a dictionary that contains a number (between 1 and n) in the form (x, x*x).

Sample Dictionary (n = 5) :
Expected Output : {1: 1, 2: 4, 3: 9, 4: 16, 5: 25}

8. Write program using sets

8a. Write a Python program to clear a set

8b. Write a Python program to find maximum and the minimum value in a set

8c. Write a Python program to find the length of a set

9. Write program using array

9a.Write a Python program to create an array of 5 integers and display the array items. Access individual element through indexes.

9b. Write a Python program to append a new item to the end of the array.

9c. Write a Python program to reverse the order of the items in the array.

9d. Write a Python program to insert a new item before the second element in an existing array.

9e. WAP to create a square matrix and print it in spiral form

10. Study of Pandas dataframe and implement dataframe related operations

Pract 1:

```
#Simple calculator (Arithmetic  & Logical Operators In Python)
num_one = int(input("Enter 1st number: "))

op = input("Enter operator: ")

num_two = int(input("Enter 2nd number: "))
if op == "+":
    print(num_one + num_two)
elif op == "-":
    print(num_one - num_two)
elif op == "*" or op == "x":
    print(num_one * num_two)
elif op == "/":
    print(num_one / num_two)
elif op == "//":
    print(num_one // num_two)
```

```
# Function Definition
def calculate():
  print(+)
  print(-)
  print(*)
  print(/)
  operation = input("Select an operator:n")
  print("Enter two numbers")
  number_1 = int(input())
  number_2 = int(input())
  if operation == '+': # To add two numbers
    print(number_1 + number_2)

  elif operation == '-': # To subtract two numbers
    print(number_1 - number_2)

  elif operation == '*': # To multiply two numbers
    print(number_1 * number_2)

  elif operation == '/': # To divide two numbers
    print(number_1 / number_2)

  else:
    print('Invalid Input')
# Function Call
calculate()
```

# Logical operators

```
a = 10
b = 10
c = -10

if a > 0 and b > 0:
    print("The numbers are greater than 0")

if a > 0 and b > 0 and c > 0:
    print("The numbers are greater than 0")
else:
    print("Atleast one number is not greater than 0")
```

```
# Python program to demonstrate

# the difference between and, &

# operator
```

```
a = 14

b = 4



print(b and a) # print_stat1

print(b & a) # print_stat2
```

Output:

```
14

4
```

This is because ‘and’ tests whether both expressions are logically True while ‘&’performs bitwise AND operation on the result of both statements.

Pract 2:

If…. Elif… else

If conditions:

- Equals: `a == b`
- Not Equals: `a != b`
- Less than: `a < b`
- Less than or equal to: `a <= b`
- Greater than: `a > b`
- Greater than or equal to: `a >= b`

These conditions can be used in several ways, most commonly in "if statements" and loops.

An "if statement" is written by using the `if` keyword.

Elif

The `elif` keyword is pythons way of saying "if the previous conditions were not true, then try this condition".

Example

```
a = 33
b = 33
if b > a:
  print("b is greater than a")
```

```
elif a == b:
  print("a and b are equal")
```

Try it Yourself »

In this example a is equal to b, so the first condition is not true, but the elif condition is true, so we print to screen that "a and b are equal".

Else

The else keyword catches anything which isn't caught by the preceding conditions.

Example

```
a = 200
b = 33
if b > a:
  print("b is greater than a")
elif a == b:
  print("a and b are equal")
else:
  print("a is greater than b")
```

Try it Yourself »

In this example a is greater than b, so the first condition is not true, also the elif condition is not true, so we go to the else condition and print to screen that "a is greater than b".

You can also have an else without the elif:

Example

```
a = 200
b = 33
if b > a:
  print("b is greater than a")
else:
  print("b is not greater than a")
```