Python Programming (28521)

Experiment No: 01   **Date:**   /   /

Name of Experiment: Write & execute programs using variables & operators.

Necessary Instruments:

- ➢ Personal Computer (Laptop/Desktop)
- ➢ Python Software
- ➢ Pycharm IDE
- ➢ Internet Connection

Objective: To gain knowledge about executing programs using variables & operators.

Working Procedure:

<u>Program No: 01</u>

Name of Program: Write a Python program to display the sentence "Hello World" on the monitor screen.

Code:

```
print("Hello World")
```

....

Output:

Hello World

....

<u>Program No: 02</u>

Name of Program: Write a Python program to calculate addition, subtraction, multiplication and division between two numbers.

Code:

```
a = int(input("Enter the first number : "))
b = int(input("Enter the second number : "))

sum = a + b
sub = a – b
mul = a * b
div = a / b
```

```
print("A + B = ", sum)
print("A - B = ", sub)
print("A * B = ", mul)
print("A / B = ", div)
```

....

Output:
Enter the first number : 4
Enter the second number : 2
A + B = 6
A - B = 2
A * B = 8
A / B = 2

....

Carefulness: Ensure input validation for numerical values, maintain correct syntax and indentation, and define and call functions appropriately. Verify mathematical operations and logical conditions for accuracy.

Remark: Both programs effectively use variables and operators to handle conditions based on user input, providing clear prompts and correct outputs.

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Python Programming (28521)

Experiment No: 02   **Date:**   /   /
Name of Experiment: Write & execute programs using branching statements.
Necessary Instruments:
  ➢ Personal Computer (Laptop/Desktop)
  ➢ Python Software
  ➢ Pycharm IDE
  ➢ Internet Connection

Objective: To gain knowledge about executing programs using branching statements.

Working Procedure:

<u>Program No: 01</u>

Name of Program: Write a Python program to find the biggest number from three numbers.

Code:
```python
def max3val():
        a = int(input("Enter first number ="))
        b = int(input("Enter second number ="))
        c = int(input("Enter third number ="))
        if (a>b) and (a>c):
                print("A is maximum and it is :", a)
        elif (b>c):
                print("B is maximum and it is :", b)
        else:
                print("C is maximum and it is :", c)
max3val()
```

....

Output:
Enter first number = 81
Enter second number = 25
Enter third number = 59
A is maximum and it is : 81

....

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Program No: 02

</div>

Name of Program: Write a Python program to calculate triangle area using function.

Code:

```
import math
def triangle_area():
        a = float(input("Enter first arm length="))
        b = float(input("Enter second arm length ="))
        c = float(input("Enter third arm length ="))
        if (a+b)>c and (b+c)>a and (a+c)>b:
                s = (a+b+c)/2
                area = math.sqrt(s*(s-a)*(s-b)*(s-c))
                print("Triangle area is = ", area)
        else:
                print("Triangle is not possible")
triangle_area()
```

....

Output:

```
Enter first arm length = 7
Enter second arm length = 9
Enter third arm length = 6
Triangle area is = 20.97617696340303
```

....

Carefulness: Ensure input validation for numerical values, maintain correct syntax and indentation, and define and call functions appropriately. Verify mathematical operations and logical conditions for accuracy.

Remark: Both programs effectively use branching statements to handle conditions based on user input, providing clear prompts and correct outputs.

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Python Programming (28521)

Experiment No: 03   **Date:**   /   /

Name of Experiment: Write & execute programs using looping statements.

Necessary Instruments:
- ➢ Personal Computer (Laptop/Desktop)
- ➢ Python Software
- ➢ Pycharm IDE
- ➢ Internet Connection

Objective: To gain knowledge about executing programs using looping statements.

Working Procedure:

Program No: 01

Name of Program: Write a Python program to print even numbers from 1 to n.

Code:
```
n = int(input("Enter the end of Range = "))
print("Printing of Even Number Series:")
for i in range(1, n+1):
        if not(i%2):
                print(i, end=" ")
```
....

Output:
```
Enter the end of Range = 50
Printing of Even Number Series:
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50
```
....

Program No: 02

Name of Program: Write a Python program to print prime numbers from 1 to n.

Code:
```
lower_value = int(input("Enter the lowest range value : "))
upper_value = int(input("Enter the upper range value : "))
print("The prime numbers in the range are : ")
for number in range (lower_value, upper_value+1):
        if number > 1:
                for i in range(2, number):
                        if (number % i) == 0:
```

```
                break
        else:
            print(number, " ", end=" ")
```
....

Output:
Enter the lowest range value: 9
Enter the upper range value: 66
The prime numbers in the range are :
11   13   17   19   23   29   31   37   41   43   47   53   59   61

....

Carefulness: Ensure input validation for numerical values, maintain correct syntax and indentation, and define and call functions appropriately. Verify mathematical operations and logical conditions for accuracy.

Remark: Both programs effectively use looping statements to handle conditions based on user input, providing clear prompts and correct outputs.

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Python Programming (28521)

Experiment No: 04   **Date:**   /   /
Name of Experiment: Write & execute programs using lists/array.
Necessary Instruments:
- ➢ Personal Computer (Laptop/Desktop)
- ➢ Python Software
- ➢ Pycharm IDE
- ➢ Internet Connection

Objective: To gain knowledge about executing programs using lists/array.

Working Procedure:

<u>Program No: 01</u>

Name of Program: Write a Python program to take input in lists and find smallest and largest numbers from the lists using function.

Code:
```python
def find_min_max():
        n = int(input("Enter the number of elements in the list: "))
        lst = []
        for i in range(n):
                elem = int(input(f"Enter element {i+1}: "))
                lst.append(elem)
        smallest = min(lst)
        largest = max(lst)
        print(f"The smallest number is: {smallest}")
        print(f"The largest number is: {largest}")
find_min_max()
```
....

Output:
Enter the number of elements in the list: 5
Enter element 1: 12
Enter element 2: 4
Enter element 3: 19
Enter element 4: 1
The smallest number is: 1
The largest number is: 19

....

Program No: 02

Name of Program: Write a Python program to calculate the sum of the elements in a list.

Code:
```python
def sum_of_list():
        n = int(input("Enter the number of elements in the list: "))
        lst = []
        for i in range(n):
                elem = int(input(f"Enter element {i+1}: "))
                lst.append(elem)
        total_sum = sum(lst)
        print(f"The sum of the elements in the list is: {total_sum}")
sum_of_list()
```

....

Output:
Enter the number of elements in the list: 5
Enter element 1: 12
Enter element 2: 4
Enter element 3: 19
Enter element 4: 1
Enter element 5: 8
The sum of the elements in the list is: 44

....

Carefulness: Ensure input validation for numerical values, maintain correct syntax and indentation, and define and call functions appropriately. Verify mathematical operations and logical conditions for accuracy.

Remark: Both programs effectively use lists operation to handle conditions based on user input, providing clear prompts and correct outputs.

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Python Programming (28521)

Experiment No: 05   **Date:**   /   /
Name of Experiment: Write & execute programs using a dictionary.
Necessary Instruments:
  ➢ Personal Computer (Laptop/Desktop)
  ➢ Python Software
  ➢ Pycharm IDE
  ➢ Internet Connection
Objective: To gain knowledge about executing programs using dictionary.

Working Procedure:

<u>Program No: 01</u>

Name of Program: Write a Python program to create a empty dictionary.

Code:
```
my_dict_one = {}
my_dict_two = {}
print(my_dict_one)
print(my_dict_two)
```
....
Output:
```
{}
{}
```
....

<u>Program No: 02</u>

Name of Program: Write a Python program to add and print elements in a dictionary.

Code:
```
my_cars = {}
print("My empty dict: ", cars)

my_cars.setdefault('Cars'[]).append("BMW")
print("First item added: ", my_cars)
```

```
my_cars.setdefault('Cars'[]).append("Toyota")
print("Second item added: ", my_cars)

my_cars.setdefault('Cars'[]).append("Honda")
print("Third item added: ", my_cars)
```
....
Output:
My empty dict: {}
First item added: {'Cars': ['BMW']}
Second item added: {'Cars': ['BMW', 'Toyota']}
Third item added: {'Cars': ['BMW', 'Toyota', 'Honda']}

....

Carefulness: Ensure input validation for numerical values, maintain correct syntax and indentation, and define and call functions appropriately. Verify mathematical operations and logical conditions for accuracy.

Remark: Both programs effectively use dictionary operation to handle conditions based on user input, providing clear prompts and correct outputs.