PYTHON WOKSHOP-1

PART-1

Translate the following statements into Python expressions in IDLE: Note down the response to each.

Do they differ from what you would expect?

The perimeter of a rectangle with length 9 & width 7

```
1    def perimeter(x,y):
2        per=2*(x+y)
3        return per
4
5    print("The perimeter with the length 9 and width 7 is",perimeter(9,7))
6
```

PROBLEMS **4**   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
The perimeter with the length 9 and width 7 is 32
PS C:\Users\user>
```

Your name stored as a variable

```
7    #defining a variable with my name
8    x='Aryan Guragain'
9    #using the defined variable in a function
10   def greetings(name):
11       print("Hello! My name is",name)
12
13   greetings(x)
14
```

PROBLEMS **4**   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Hello! My name is Aryan Guragain
PS C:\Users\user> □
```

Python is great, it's wild!

```
16   print("Python is great, its wild!")
17
```

PROBLEMS **4**   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Python is great, its wild!
PS C:\Users\user>
```

The difference between Beth's age (57) and Tom's (34)

```
18   beth_age=57
19   tom_age=39
20   diff=beth_age-tom_age
21
22   print("The different between Beth's age",[beth_age],"and Tom's age",[tom_age],"is",diff)
23
```

PROBLEMS **4**   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
The different between Beth's age [57] and Tom's age [39] is 18
PS C:\Users\user>
```

2 to the 10th power

```
24   def calc_power(x):
25       pow=2**x
26       print(pow)
27
28   calc_power(10)
29
```

PROBLEMS **4**   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
1024
PS C:\Users\user>
```

7 factorial minus 5 factorial

```
31  def factorial(n):
32      if n == 0:
33          return 1
34      else:
35          return n * factorial(n-1)
36
37  factorial_of_seven = factorial(7)
38  factorial_of_five = factorial(5)
39
40  diff_of_factorials = factorial_of_seven - factorial_of_five
41  print("The difference between 7! and 5! is:", diff_of_factorials)
42
```

```
PROBLEMS 4    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    SEARCH ERROR

PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
The difference between 7! and 5! is: 4920
PS C:\Users\user>
```

Your forename multiplied by 5

```
43  my_forename="Aryan"*5
44  print(my_forename)
45
```

```
PROBLEMS 4    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    SEARCH ERROR

PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
AryanAryanAryanAryanAryan
PS C:\Users\user>
```

Your name left justified 15 spaces

```
46  name = "Aryan Guragain"
47  justified_name = name.ljust(15)
48  print(justified_name)
49
```

```
PROBLEMS 4    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    SEARCH ERROR

PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Aryan Guragain
PS C:\Users\user>
```

PI to 5 decimal places

```
50  import math
51
52  pi_to_five_decimal_places = round(math.pi, 5)
53
54  print(pi_to_five_decimal_places)
55
```

```
PROBLEMS 4    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    SEARCH ERROR

PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
3.14159
PS C:\Users\user>
```

A variable with the name def that stores the number 7

```
56  #a variable named def is declared and value is assigned
57  def=7
58  print(def)
59
```

```
PROBLEMS 4    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    SEARCH ERROR

PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
  File "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py", line 1
    def=7
       ^
SyntaxError: invalid syntax
PS C:\Users\user>
```

(Note-This throws an error of invalid syntax while storing value 7 in variable 'def' because def is a built-in keyword and we cannot use it as a variable)

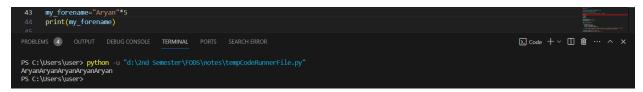## 200 modulus 12

```
60    x=200%12
61    print(x)
62
```

PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
8
PS C:\Users\user>
```

7.2 as an integer value

```
63    decimal_value=7.2
64    whole_part=int(decimal_value)
65    print(whole_part)
66
```

PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
7
PS C:\Users\user>
```

The Unicode encoding for your name

```
76    #The unicode encoding for your name
77    a = "Aryan Guragain"
78
79    # Unicode encoding
80    unicodename = [ord(char) for char in a]
81
82    # Display the result
83    print(f"Original Name: {a}")
84    print("Unicode Encoded:")
85    for char, code in zip(a, unicodename):
86        print(f"{char}: {code}")
87
```

PROBLEMS 8 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR

```
PS C:\Users\user> python -u "c:\Users\user\Desktop\to mail\tempCodeRunnerFile.py"
Original Name: Aryan Guragain
Unicode Encoded:
A: 65
r: 114
y: 121
a: 97
n: 110
 : 32
G: 71
u: 117
r: 114
a: 97
g: 103
a: 97
i: 105
n: 110
PS C:\Users\user>
```

PART 2

1.Write a Python program that prompts the user for two integer values and displays the results of the first number divided by the second, with exactly two decimal places displayed.

```
77    first_num=int(input("enter a number: "))
78    second_num=int(input("Enter another number: "))
79    result=first_num/second_num
80    rounded_off_result=round(result,2)
81    print("The quotient is", rounded_off_result)
82
```

PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
enter a number: 55
Enter another number: 43
The quotient is 1.28
PS C:\Users\user>
```

2.Write a Python program that prompts the user for two floating-point values and displays the results of the first number divided by the second, with exactly two decimal places displayed.

```
85    a=float(input("Enter a number:"))
86    b=float(input("Enter another number:"))
87    result=a/b
88    rounded_off_result=round(result,2)
89    print("The result is ", rounded_off_result)
90
```

PROBLEMS 4   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Enter a number:44.5
Enter another number:31.2
The result is  1.43
PS C:\Users\user>
```

3.Write a Python program that prompts the user for two floating-point values and displays the results of the first number divided by the second, with exactly two decimal places displayed in scientific notation.

```
105    num1=float(input("Enter first float number :"))
106    num2=float(input("Enter second float number :"))
107
108    #Calculate the result of first number divided by second
109    division_result=num1/num2
110
111    #Convert the division result to scientific notation
112    sci_notation=format(division_result,"0.2e")
113    print("The result is", sci_notation)
114
```

PROBLEMS 4   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Enter first float number :2.22
Enter second float number :65.4
The result is 3.39e-02
PS C:\Users\user>
```

4.Write a Python program that prompts the user to enter a UTF-8 value between 32 and 126, and displays the corresponding character.

```
123    utfvalue = int(input("Enter a UTF-8 value between 32 and 126: "))
124
125    # Check if the entered value is within the valid range
126    if 32 <= utfvalue <= 126:
127        # Convert the UTF-8 value to a character
128        character = chr(utfvalue)
129
130        # Display the result
131        print("The corresponding character for UTF-8 value of",{utfvalue}, "is:",{character})
132    else:
133        print("Invalid input. Please enter a UTF-8 value between 32 and 126.")
134
```

PROBLEMS 8   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "c:\Users\user\Desktop\to mail\tempCodeRunnerFile.py"
Enter a UTF-8 value between 32 and 126: 99
The corresponding character for UTF-8 value of {99} is: {'c'}
PS C:\Users\user>
```

PART 3 Define a function,

1. squared that take an integer and returns the value squared.

```
97    def squared(num):
98        result=num **2
99        return result
100
101    a=int(input("Enter a number:"))
102    print("The square of the  entered number is :",squared(a))
103
```

PROBLEMS 5   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SEARCH ERROR

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Enter a number:45
The square of the  entered number is : 2025
PS C:\Users\user>
```

2. print_ast that takes an integer value n and a string value symbol, with a default value of "*". This character should be printed n times to the console.

```
110
111    def print_ast(n):
112        result= "*"*n
113        print(result)
114
115    a=int(input("Enter the number of times you want to print *:"))
116    symbol=input("Enter the symbol (default is '*'):")
117    if not symbol:
118        symbol="*"
119    print_ast(a)
```

3. Create a function that prompts the user for two integer values and displays the results of the first number divided by the second to two decimal places.

```
123    def div_two():
124        num1 = int(input("Enter the numerator: "))
125        num2 = int(input("Enter the denominator: "))
126        result=num1/num2
127        rounded_of_result=round(result,2)
128        print(rounded_of_result)
129
130    div_two()
131
```

PART 4

4. Create a Python program called calculator with functions to perform the following arithmetic calculations, each should take two decimal parameters and return the result of the arithmetic calculation in question.

A. Addition

B. Subtraction

C. Multiplication

D. Division

E. Truncated division

F. Modulus

G. Exponentiation

```python
def addition(a,b):
    sum=a+b
    print(sum)

def subtraction(a,b):
    difference=a-b
    print (difference)

def multiplication(a,b):
    product=a*b
    print(product)

def division(a,b):
    quotient=a/b
    print(quotient)

def modulus(a,b):
    mod=a%b
    print(mod)

def trunkated_division(a,b):
    trunk_div=a//b
    print(trunk_div)

def power(base,exponent):
    result=base**exponent
    return result


x=int(input("Enter first number"))
y=int(input("Enter second number:"))
print("\nChoose operation")
print ("1.Addition")
print ("2.Substraction")
print ("3.Multiplication")
print ("4.Division")
```

```python
print ("5.Modulus")
print ("6.Truncated Division")
print ("7.Power")

choice=int(input("Enter your choice"))

if choice==1:
    addition(x,y)

elif choice==2:
    subtraction(x,y)

elif choice==3:
    multiplication(x,y)

elif choice==4:
    division(x,y)

elif choice==5:
    modulus(x,y)

elif choice==6:
    trunkated_division(x,y)

elif choice==7:
    b=(int(input("Enter the base of the power:")))
    e=(int(input("Enter the exponent")))
    print (power(b,e))

else:
    print("Invalid choice. Please try again")
```

Output:

```
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\caculator.py"
Enter first number56
Enter second number:45

Choose operation
1.Addition
2.Substraction
3.Multiplication
4.Division
5.Modulus
6.Truncated Division
7.Power
Enter your choice1
101
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\caculator.py"
Enter first number23
Enter second number:20

Choose operation
1.Addition
2.Substraction
3.Multiplication
4.Division
5.Modulus
6.Truncated Division
7.Power
Enter your choice2
3
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\caculator.py"
Enter first number25
Enter second number:5

Choose operation
1.Addition
2.Substraction
3.Multiplication
4.Division
5.Modulus
6.Truncated Division
7.Power
Enter your choice3
125
PS C:\Users\user>
```