

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\F0DS\notes\tempCodeRunnerFile.py"

File "d:\2nd Semester\F0DS\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\F0DS\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\F0DS\notes\tempCodeRunnerFile.py"

7

PS C:\Users\user>

The Unicode encoding for your name

```
67 name = "Aryan Guragain"
68
69 for char in name:
70     code_point = ord(char)
71     hex_code = hex(code_point)
72     print(f"U+{hex_code[2:].upper()}")
73
```

PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR

PS C:\Users\user> python -u "d:\2nd Semester\F0DS\notes\tempCodeRunnerFile.py"

U+41
U+72
U+79
U+61
U+6E
U+20
U+47
U+75
U+72
U+61
U+67
U+61
U+69
U+6E

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.

```
76
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.

```
129 while True:
130     try:
131         num = int(input("Enter a UTF-8 value between 32 and 126: "))
132         if 32 <= num <= 126:
133             print(f"\u001b[32m{chr(num)}\u001b[0m")
134             break
135         else:
136             print(f"\u001b[31mValue must be between 32 and 126.\u001b[0m")
137     except ValueError:
138         print(f"\u001b[31mInvalid input. Please enter a number.\u001b[0m")
139

PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Enter a UTF-8 value between 32 and 126: 56
8
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Enter a UTF-8 value between 32 and 126: 68
D
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)
```

PROBLEMS 5 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR

PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Enter the number of times you want to print *:10
Enter the symbol (default is '*'):*

PS C:\Users\user>

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
```

PROBLEMS 5 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR

PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\tempCodeRunnerFile.py"
Enter the numerator: 25
Enter the denominator: 12
2.08
PS C:\Users\user>

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

```

1  def addition(a,b):
2      sum=a+b
3      print(sum)
4
5  def subtraction(a,b):
6      difference=a-b
7      print (difference)
8
9  def multiplication(a,b):
10     product=a*b
11     print(product)
12
13 def division(a,b):
14     quotient=a/b
15     print(quotient)
16
17 def modulus(a,b):
18     mod=a%b
19     print(mod)
20
21 def trunkated_division(a,b):
22     trunk_div=a//b
23     print(trunk_div)
24
25 def power(base,exponent):
26     result=base**exponent
27     return result
28
29
30 x=int(input("Enter first number:"))
31 y=int(input("Enter second number:"))
32 print("\nChoose operation")
33 print ("1.Addition")
34 print ("2.Substraction")
35 print ("3.Multiplication")
36 print ("4.Division")

```

```

37 print ("5.Modulus")
38 print ("6.Truncated Division")
39 print ("7.Power")
40
41 choice=int(input("Enter your choice"))
42
43 if choice==1:
44     addition(x,y)
45
46 elif choice==2:
47     subtraction(x,y)
48
49 elif choice==3:
50     multiplication(x,y)
51
52 elif choice==4:
53     division(x,y)
54
55 elif choice==5:
56     modulus(x,y)
57
58 elif choice==6:
59     trunkated_division(x,y)
60
61 elif choice==7:
62     b=int(input("Enter the base of the power:"))
63     e=int(input("Enter the exponent"))
64     print (power(b,e))
65
66 else:
67     print("Invalid choice. Please try again")
68
69

```

Output:

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR
PS C:\Users\user> python -u "d:\2nd Semester\FODS\notes\caculator.py"
Enter first number56
Enter second number45

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 number20

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 number5

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>

```

