

# Artificial Intelligence Lab# 1

**Ques: 1** What is an expression?  
Any value is an expression.

**Ques: 2** What is syntax error?  
Syntax errors are the most basic type of error. They arise when the Python parser is unable to understand a line of code.

**Ques: 3** What is the result of this expression: "\*" \* 10.  
Output:

```
In [36]: "*" * 10
Out[36]: '*****'
```

**Ques: 4** What is a variable?  
Variables are reserved memory locations to store values. This means that when you create a variable you reserve some space in memory. Based on the data type of a variable, the interpreter allocates memory and decides what can be stored in the reserved memory.

**Ques: 5** What are the primitive built-in types in Python?  
Python has four built-in types:

- Integer.
- Float.
- String.
- Boolean.

**Ques: 6** When should we use triple quotations to define a string?  
They are used to specify multiline comments.

- Ques: 7** Assuming (name = “John Smith”)
- i) What does name[1] return?  
“o”
  - ii) What about name[-2]?  
“t”
  - iii) What about name[1:-1]?  
“ohn smit”
  - iv) How to get the length of name?  
Using built-in function len().

- Ques: 8** Given (name = “john smith”), what will **name.title()** return?  
Output:

```
In [41]: name = "john smith"
```

```
In [42]: name.title()
```

```
Out[42]: 'John Smith'
```

- Ques: 9** What does name.strip() do?  
Output:

```
In [43]: name.strip()
```

```
Out[43]: 'john smith'
```

- Ques: 10** What will name.find(“Smith”) return?  
Output:

```
In [44]: name.find("Smith")
```

```
Out[44]: -1
```

**Ques: 11** What will be the value of name after we call name.replace(“j”, “k”)?

Output:

```
In [45]: name.replace("j","k")
Out[45]: 'kohn smith'
```

**Ques: 12** How can we check to see if name contains “John”?

By using the built-in function find(); name.find(“John”). If it returns a positive value this means that John is present.

**Ques: 13** What are the 3 types of numbers in Python?

Integer, float and complex.

**Ques: 14** What is the difference between 10 / 3 and 10 // 3?

“/” is used for simple division whereas “//” is used for floored division.

**Ques: 15** What is the result of 10 \*\* 3?

Output:

```
In [46]: 10 ** 3
Out[46]: 1000
```

**Ques: 16** Given (x = 1), what will be the value of after we run (x += 2)?

3

**Ques: 17** How can we round a number?

Using built-in function round().

**Ques: 18** What is the result of float(1)?

1.0

**Ques: 19** What is the result of 10 == “10”?

False

**Ques: 20** What is the result of “bag” > “apple”?

True

**Ques: 21** What is the result of not(True or False)?  
False

**Ques: 22** What does range(1, 10, 2) return?  
1 3 5 7 9

**Ques: 23** Write a function that returns the maximum of two numbers.  
Code:

```
#Question_23
"""Write a function that returns the maximum number between two numbers"""

def maximum(num1, num2):
    if (num1 > num2):
        return num1
    else:
        return num2
```

Answer:

```
In [54]: maximum(1, 2)
Out[54]: 2
```

**Ques: 24** Write a function called check\_num that takes a number.

- If the number is divisible by 3, it should return “Divisible by 3”.
- If it is divisible by 5, it should return “Divisible by 5”.
- If it is divisible by both 3 and 5, it should return “Divisible by both”.
- Otherwise, it should return the same number.

Code:

```
#Question_24
"""
Write a function check_num
•If the number is divisible by 3, it should return “Divisible by 3”.
•If it is divisible by 5, it should return “Divisible by 5”.
•If it is divisible by both 3 and 5, it should return “Divisible by both”.
•Otherwise, it should return the same number.
"""

def check_num(number):
    if ((number % 3 == 0) and (number % 5 == 0)):
        print("Divisible by both")
    elif (number % 5 == 0):
        print("Divisible by 5")
    elif (number % 3 == 0):
        print("Divisible by 3")
    else:
        return number
```

Answer:

```
In [69]: check_num(15)
Divisible by both
```

**Ques: 25** Write a function called **showNumbers** that takes a parameter called **limit**. It should print all the numbers between 0 and limit.

Code:

```
#Question_25
"""
Write a function called showNumbers that takes a parameter called limit.
It should print all the numbers between 0 and limit
"""

def showNumber(limit):
    for i in range(limit):
        print(i)
```

Answer:

```
In [74]: showNumber(5)
0
1
2
3
4
```

**Ques: 26** Write a Python program which accepts the radius of a circle from the user and compute the area of circle

Code:

```
#Question_26
"""
Write a Python program which accepts the radius of a circle
from the user and compute the area of circle
"""

radius = float(input("Enter the radius of circle: "))

print ("Area of circle: ", 3.1417*radius*radius)
```

Answer:

```
Enter the radius of circle: 5
Area of circle: 78.5425
```

**Ques: 27** Write a function that returns the sum of multiples of 3 and 5 between 0 and **limit** (parameter). For example, if limit is 20, it should return the sum of 3, 5, 6, 9, 10, 12, 15, 18, 20.

Code:

```
#Question_27
"""
Write a function that returns the sum of multiples of
3 and 5 between 0 and limit (parameter). For example, if limit is 20,
it should return the sum of 3, 5, 6, 9, 10, 12, 15, 18, 20.

"""
def blahblah(limit):
    sum = 0;
    for i in range(limit + 1):
        if ((i % 3 == 0) or (i % 5 == 0)):
            sum +=i
    return sum
```

Answer:

```
In [78]: blahblah(5)
Out[78]: 8
```

**Ques: 28** Write a function called **show\_stars(rows)**. If **rows** are 5, it should print the following:

```
*
**
***
****
*****
```

Code:

```
#Question_28
"""
Ques: 28 Write a function called show_stars(rows). If rows are 5,
it should print the following:
*
**
***
****
*****

"""
def show_stars(rows):
    for i in range(rows):
        for j in range(i+1):
            print("*", end="")
        print()
```

Answer:

```
In [104]: show_stars(3)
*
**
***
```

**Ques: 29** Write a function that prints all the prime numbers between 0 and limit where limit is a parameter.

Code:

```
#Question_29
"""
Write a function that prints all the prime numbers
between 0 and limit where limit is a parameter.
"""
def prime(limit):
    for i in range(2, limit+1):
        isPrime = True

        for j in range (2, i):
            if (i % j == 0):
                isPrime = False

        if isPrime:
            print(i)
```

Answer:

```
In [124]: prime(7)
2
3
5
7
```

**Ques: 30** Write a Python program to display the first and last colors from the following list. color\_list = ["Red","Green","White" ,"Black"]

color\_list[0] for first and color\_list[3] for last color

**Ques: 31** Write a Python program which accepts the user's first and last name and print them in reverse order with a space between them.

Code:

```
#Question_31
"""
Write a program that prints first and last name in reverse order
"""
first_name = input('Enter your first name: ')
last_name = input('Enter your last name: ')

print(last_name + " " + first_name)
```

Answer:

Enter your first name: Muhammad

Enter your last name: Idrees

Idrees Muhammad

**Ques: 32** Write a Python program to find whether a given number (accept from the user) is even or odd, print out an appropriate message to the user.

Code:

```
#Question_32
"""
Write a program to tell user if he has entered an even or odd number
"""
number = int(input('Input a number: '))

if number % 2 == 0:
    print("The entered number is even")
else:
    print("The entered number is odd")
```

Answer:

Input a number: 3

The entered number is odd



**Ques: 33** Write a Python program that accepts an integer (n) and computes the value of  $n+nn+nnn$ .

Code:

```
#Question_33
"""
Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn.
"""
number = int(input("Please input a number: "))
number += (number*10 + number) + (number*100 + number*10 + number)
print(number)
```

Answer:

```
Please input a number: 1
123
```

**Ques: 34** Write a Python program to test whether a passed letter is a vowel or not.

Code:

```
#Question_34
"""
Program to tell if the given word has vowel or not
"""
word = "Pakistan"
if (word.find("a") < 0 or word.find("e") < 0 or word.find("o") < 0 or word.find("i") < 0 or
    print ("The word has vowel")
else:
    print ("No vowel present in word")
```

Answer:

```
The word has vowel
```

**Ques: 35** Write a Python program to sum of three given integers. However, if two values are equal sum will be zero.

Code:

```
#Question_35
"""
Write a Python program to sum of three given integers.
However, if two values are equal sum will be zero.
"""
num1 = 1
num2 = 2
num3 = 3
if (num1 == num2 or num2 == num3):
    print(0)
else:
    print(num1 + num2 + num3)
```

Answer:

6

**Ques: 36** Write a Python program that will return true if the two given integer values are equal or their sum or difference is 5.

Code:

```
#Question_36
"""
Write a Python program that will return true if the two given
integer values are equal or their sum or difference is 5.
"""
def gaga(num1, num2):
    if (num1 == num2 or (num1 + num2 == 5) or num1 - num2):
        return True
    else:
        return False
```

Answer:

```
In [143]: gaga(3, 2)
Out[143]: True
```

**Ques: 37** Write a Python program to solve  $(x + y)^z$ . Test Data :  $x = 4, y = 3, z = 2$   
Expected Output :  $(4 + 3)^2 = 49$

Code:

```
#Question_37
"""
Write a Python program to solve  $(x + y)^z$ 
"""
x = 4
y = 3
z = 2

print(pow((x + y), z))
```

Answer:

49