PES UNIVERSITY
UNIT – 1

1. Write a program to print FizzBuzz. Input an integer. If it is
   - Divisible by 3 -print FIZZ
   - Divisible by 5 -print BUZZ
   - Divisible by both 3 and 5 -FIZZBUZZ
   - Else print the number itself

   ```
   n = int(input("Enter the number:"))
   if n%3==0 and n%5==0:
       print("FIZZBUZZ")
   elif n%3==0:
       print("FIZZ")
   elif n%5==0:
       print("BUZZ")
   else:
       print("Number neither divible by 3 or 5")
   ```

2. **Write a python program that takes the name and age of the user as input and displays a message whether the user is eligible to apply for a driving license or not. (the eligible age is 18 years).**

   ```
   Name = input("Enter your Name:")
   Age = int(input("Enter your Age:"))
   if Age>=18:
       print(Name,"You are eligible to apply for Driving License!")
   else:
       print(Name,"You are not eligible to apply for Driving License")
   ```

3. **Write a python program to check if the year entered by the user is a leap year or not.**

Note: Conditions for a Leap Year Here are the two conditions that any year must satisfy to be called a leap year

1. The year must be perfectly divisible by 400.
2. The number must be divisible by 4 but not by 100.

```
yr = int(input("Enter a 4-digit year:"))
if yr%100 == 0:
    if yr%400 == 0:
        leap = True
    else:
        leap = False
elif yr%4 == 0:
    leap = True
else:
    leap = False
if leap == True:
    print(yr,"is a leap year")
else:
    print(yr, "is not a leap year")
```

```
Enter a 4-digit year:2002
2002 is not a leap year

============== RESTART: C:/User
Enter a 4-digit year:2020
2020 is a leap year
```

4. **Write a python program using control structures to print the following pattern:**

```
1
1 3
1 3 5
1 3 5 7
```

```
for a in range(3,10,2):
    for b in range(1,a,2):
        print(b,end=' ')
    print()
```

```
1
1 3
1 3 5
1 3 5 7
```

5. **What is the difference between implicit type conversion and explicit type conversion?**

   Python internally changes the data type of some operands so that all operands have same data type. This type of conversion is automatic, that is it is called **implicit type conversion.**

   Eg: If we have 10.5/3, then by default python will promote the denominator 3 from integer type to 3.0 which is of float type, this is implicit type conversion.

   An explicit type conversion is user-defined conversion that forces an expression to be of specific type.. This explicit type conversion is also known as Type casting.

   Eg: if we have a=3 and b=5.0, then

   int(b)

   will cast the data-type of the expression as int.

   Similarly,

   d= float(a)

   will assign value 3.0 to d because float(a) cast the expression's value to float type and then assigned it to d.

6. **What is the output of following code?**

```
a = True
b = False
c = False

if not a or b:
    print (1)
elif not a or not b and c:
    print (2)
elif not a or b or not b and a:
    print (3)
else:
    print (4)
```

   Answer : 3

7. **What is the output for following code?**

```
a = True
b = False
c = False

if a or b and c:
    print ("HELLOWORLD")
else:
    print ("helloworld")
```

Answer: HELLOWORLD

8. What will be the output of following python code?

```
for i in range(0,10,2):
        if(i % 5==0):
                print(i)
```

Answer: 0

9. How many ways are there in Python to represent an integer literal?

Python allows three types of integer literals:

a) **Decimal (base 10) integer literals :** An integer literal consisting of a sequence of digits is taken to be decimal integer literal unless it begins with 0 (digit zero). For instance, 1234, 41, +97, -17 are decimal integer literals.

b) **Octal (base 8) integer literals:** A sequence of digits starting with 0o(digit zero followed by letter o) is taken to be an octal integer. For instance, decimal integer 8 will be written as 0o10 as octal integer and decimal integer 12 will be written 0o14 as octal integer.

c) **Hexadecimal (base 16) integer literals:** A sequence of digits preceded by 0x or 0X is taken to be an hexadecimal integer. For instance, decimal 12 will be written as 0XC as hexadecimal integer.

10. Which of the following identifier names are invalid and why?

a) Serial_no. – dots not allowed
b) 1st_room – must not begin with a digit
c) Hundred$ - only special character allowed is underscore, $ not allowed
d) Total marks- cannot contain space in between
e) Total-marks – hyphen not allowed
f) True- A keyword cannot be used as an identifier.

11. In how many different ways can you work in python?

Python works in two modes:

a) **Interactive mode:** In interactive mode, instructions are given in front of Python prompt (eg,, >>>) in Python Shell. Python carries out the given instruction and shows the result there itself.

b) **Script/ Batch mode:** Python instructions are stored in a file generally with **.py** extension and are executed together in one go as a unit. The saved instructions are known as Python script or Python program.

12. What are the advantages and limitations in python?

Advantages of python:

i. It is a “Easy to use” programming language since it is both object oriented and procedural programming language, and ahigh level language.
ii. It is an “Expressive Language” since it has a simpler syntax and fewer lines of code.
iii. It is an interpreted language and hence easy to debug.
iv. Its Completeness- Since there are various modules in Python standard library for diverse functionality such as GUI Development, web-pages, emails, databases, network connections and many more.
v. It is a Cross-platform Language and can run equally well on variety of platforms- Windows, Linux/UNIX, Macintosh, Hence Python is a portable language
vi. It is a Free and open-source language as it is freely available along the source code.
vii. Variety of Usage/Applications-Some of the fields/applications of python programming is Scripting, Web Applications, Game Development, Database Applications GUI Programs, System Administrations.

Disadvantages of Python:

i. Not the Fastest Language
ii. Less Libraries than C, Java, Perl
iii. Not strong on type-binding
iv. Not Easily Convertible

13. Write a program to implement a simple calculator for two input integers. Offer choices through a menu.

```
print("Enter two numbers below")
a = int(input("Enter the first number:"))
b = int(input("Enter the second number:"))
ch = 0
while ch < 6:
   print("Menu for a simple calculator")
   print("1.Add")
   print("2.Substract")
   print("3.Multiply")
   print("4.Divide")
   print("5.Modulo")
   print("6.Exit")
   ch =int(input("Enter the choice between 1 to 6:"))
   if ch==1:
      c = a+b
      print("Sum is:",c)
   elif ch==2:
      c = a-b
      print("Difference is:",c)
   elif ch==3:
      c = a * b
```

```
    print("Product is:",c)
  elif ch==4:
    c = a/b
    print("Quotient is:",c)
  elif ch==5:
    c = a%b
    print("Remainder is:",c)
  elif ch==6:
    break
  else: print("Invalid Choice")
```

```
Enter two numbers below
Enter the first number:82
Enter the second number:74
Menu for a simple calculator
1.Add
2.Substract
3.Multiply
4.Divide
5.Modulo
6.Exit
Enter the choice between 1 to 6:1
Sum is: 156
Menu for a simple calculator
1.Add
2.Substract
3.Multiply
4.Divide
5.Modulo
6.Exit
Enter two numbers below
Enter the first number:82
Enter the second number:74
Menu for a simple calculator
1.Add
2.Substract
3.Multiply
4.Divide
5.Modulo
6.Exit
Enter the choice between 1 to 6:5
Remainder is: 8
Menu for a simple calculator
1.Add
2.Substract
3.Multiply
4.Divide
5.Modulo
6.Exit
Enter the choice between 1 to 6:
```

14. Write a program to find the sum of the series: $s = 1+x+x^2+x^3....+x^n$

```
x= float(input("Enter the value of x:"))
n= int(input("Enter value of n (for x **n):"))
s = 0
for a in range(n+1):
        s+= x**a
print("Sum of first", n, "terms:", s)
```

```
Enter the value of x:5
Enter value of n (for x **n):3
Sum of first 3 terms: 156.0
```

15. Numbers in the form 2^n-1 are called Mersenne Numbers, e.g:

$2^1-1=1$, $2^2-1=3$, $2^3-1=7$

Write a python program that displays first ten Mersenne numbers.

```
print("First ten Mersenne numbers")
for a in range(1,11):
        mersum = 2 ** a-1
        print(mersum, end= " ")

print()
```

```
First ten Mersenne numbers
1 3 7 15 31 63 127 255 511 1023
```

16. How to convert a number from base 10 to base 2?

The algorithm for converting a number in base 10 to base 2 is to successively divide the number bytes until the remainder becomes 0.

56. Write a Python program to print the following pattern using control structures

A
B C D
E F G H I
J K L M N O P
Q R S T U V W X Y

Answer:

```
increment = 1
val = 65
for i in range(0, 5):
for j in range(0, increment):
ch = chr(val)
```

print(ch, end=" ")
val = val + 1 increment = increment + 2 print()

59. Write a Python program that prompts the user to enter an upper or lower case letter and displays the corresponding ASCII value.
Answer
letter = input('Enter a lower or upper case letter: ')
print('The Ascii value for the letter', letter, 'is', ord(letter))

61. Write a Python program that allows the user to enter a four-digit binary number and displays its value in base 10. Each binary digit should be entered one per line, starting with the leftmost digit , as shown below.
Enter leftmost 1
Enter the next 0
Enter the next 0
Enter the next 1
The value is 9

digit1 = int(input('Enter leftmost digit: '))
digit2 = int(input('Enter the next digit: '))
digit3 = int(input('Enter the next digit: '))
digit4 = int(input('Enter the next digit: '))
value = (digit1 * 8) + (digit2 * 4) + (digit3 * 2) + digit4
print('the value is', value)

True and False Questions:

69. True or False? In the Man, Cabbage, Goat and Wolf problem example, the state [W, E, W, E] indicates that the cabbage and wolf are on the east side of the river, the man and goat are on the west side.
Ans- True

72. True or False? Arithmetic overflow can result from the division of two floating-point values.
Ans- False

75. True or False? 1 <= num<= 10 is not a valid Boolean expression in most programming languages, but is allowed in Python.
Ans- True

76. True or False? In Python, indentation is not significant. It is simply a strict convention used for readability and considered good programming etiquette.
Ans - False

Fill in the blanks:

88. 10011 is a binary number. The number that it translates to in the decimal system that we are used to is_____.

Ans- 19

92. An identifier that already has a predefined meaning in Python, and therefore cannot be used as a variable, is known as a _____

Ans-keyword

95. The floor division of two integers yields a result of_____type.

Ans-integer

96. To check if two objects reference the same memory address,_____operator is used.

Ans-is

97. In Python, a variable is assigned a value of one type, and then later assigned a value of a different type. This will yield_____.

Ans- No error

98. To print a line a text without ending it with a newline,_____argument is used with print().

Ans- end