Programming Practical List 1

Q1. Write a program in Python to accept First Name and Last Name from the user. Display "Good Day" wish combined with the First Name and Last Name.

Sample output:

Enter First Name: Aradhya
Enter Last Name: Sengupta
Good Day Aradhya Sengupta

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P1
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

Fn = str(input("Enter your first name: "))
Ln = str(input("Enter your last name: "))

print("Good Day", Fn, Ln)
```

Output:

```
Enter your first name: Shesh
Enter your last name: Shiromani
Good Day Shesh Shiromani
```

Q2. Write a program in python to accept Length (in inches of type float) and Breadth (in inches of type float) of a Rectangle.
Find and display (a) Area of the rectangle and (b) Perimeter of the rectangle.

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P2
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

      L = float(input("Enter the length of the rectangle: "))
      B = float(input("Enter the breadth of the reactangle: "))

      A = L*B
      P = 2*(L + B)

      print("Area of the rectangle: ", A)
      print("Perimeter of the rectangle", P)
```

Output:

```
      Enter the length of the rectangle: 2
      Enter the breadth of the reactangle: 3
      Area of the rectangle:  6.0
      Perimeter of the rectangle 10.0
```

Q3. Write a Python program to convert degree to radian.
Note : The radian is the standard unit of angular measure, used in many areas of mathematics. An angle's measurement in radians is numerically equal to the length of a corresponding arc of a unit circle; one radian is just under 57.3 degrees (when the arc length is equal to the radius).

Sample output:

Input degrees: 45
In Radians : 0.7857142857142857

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P3
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#


D = float(input("Input Degree: "))
rad = D/57.3

print("The value in radians is: ", rad)
```

Output:

```
Input Degree: 60
The value in radians is:  1.0471204188481675
```

Q4. Write a Python program to convert radians to degrees.

Sample Output:

Input radians: 2
In Degree : 114.54545454545455

Answer:

```
# ------------------------------------------------------------------#
# List-Program No              : L1-P4
# Developed By           : Shesh Shiromani
# Date                   : 24th April 2024
# ------------------------------------------------------------------#

rad = float(input("Input radians: "))
D = rad*57.3

print("The value in degrees is: ", D)
```

Output:

```
Input radians: 57
The value in degrees is:  3266.1
```

Q5. Write a Python program to calculate the area of a trapezoid.

Note : A trapezoid is a quadrilateral with two sides parallel. The trapezoid is equivalent to the British definition of the trapezium. An isosceles trapezoid is a trapezoid in which the base angles are equal.(Area= ½*h*(a+b), where h is the height and a ,b are length of parallel sides)

Sample Output:

```
Height of trapezoid: 10
Top Width          : 12
Bottom Width       : 18
Area is            : 150.0
```

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P5
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

TW = float(input("Enter the top width of the trapezium: "))
BW = float(input("Enter the  bottom width of the trapezium: "))
H = float(input("Enter the height of the trapezium: "))

A = 0.5*(TW + BW)*H

print("Area of the trapezium is: ",A)
```

Output:

```
Enter the top width of the trapezium: 4
Enter the  bottom width of the trapezium: 6
Enter the height of the trapezium: 5
Area of the trapezium is:  25.0
```

Q6. Write a Python program to calculate the area of a parallelogram.

Note : A parallelogram is a quadrilateral with opposite sides parallel (and therefore opposite angles equal). A quadrilateral with equal sides is called a rhombus, and a parallelogram whose angles are all right angles is called a rectangle.

Sample Output:

Length of base : 9
Height of parallelogram : 7
Expected Output: Area is : 63.0

Answer:

```
# -----------------------------------------------------------------#
# List-Program No             : L1-P6
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# -----------------------------------------------------------------#

      L = float(input("Enter the lengh of the parallelogram: "))
      H = float(input("Enter the height of the parallelogram: "))

      A = L*H

      print("Area of the parallelogram is: ", A)
```

Output:

```
      Enter the lengh of the parallelogram: 4
      Enter the height of the parallelogram: 5
      Area of the parallelogram is:  20.0
```

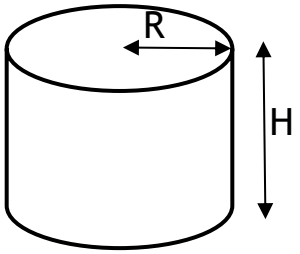
Q7. Write a Python program to calculate volume ($\pi r^2 h$) and surface area ($2\pi rh+2\pi r^2$) of a Cylindrical Oil Container.

Also

(i) Calculate the price of painting this Cylindrical Oil Container, if the price for painting is Rs. 530 per square meter.

(ii) Maximum cost of Petrol, that can be stored in the cylindrical container, if the price of petrol is Rs. 73 per litre . [Remember 1 mtr cube = 1000 litre]

```
Sample Output:
Height [in meters]: 5
Radius [in meters]: 3
Volume :  141.42857142857142 [meter cube]
Volume [Rounded to Decimals]: 141.43
Surface Area is:  150.85714285714286 [mtr sq]
Surface Area [Rounded to 2 Decimals]:150.86
Painting Charges [Rs.]: 79955.8
Cost of Petrol   [Rs.]: 10324390.0
```



Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P7
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

H = float(input("Enter the height of the cylinder: "))
R = float(input("Enter the radius of the cylinder: "))

V = R**2*H*3.14159
SA = 2*3.14159*R*(H+R)

print(("Volume of the cylinder: "),V)
print(("Surface area of the cylinder: "),SA)
print(("Volume of the cylinder rounded upto 2 decimal places: "), round(V,2))
print(("Surface area of the cylinder rounded upto 2 decimal places:
"),round(SA,2))

print("Painting Charges(Rs.): ", 530*round(SA,2))
print("Maximum cost of petrol: ", 73*1000*round(V,2))
```

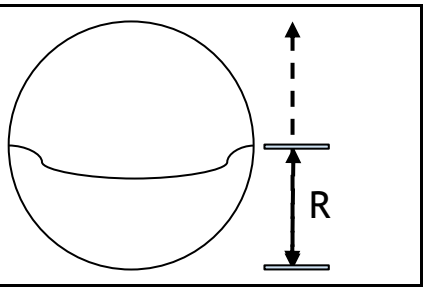
Output:

```
Enter the height of the cylinder: 4
Enter the radius of the cylinder: 2
Volume of the cylinder:  50.26544
Surface area of the cylinder:  75.39815999999999
Volume of the cylinder rounded upto 2 decimal places:  50.27
Surface area of the cylinder rounded upto 2 decimal places:  75.4
Painting Charges(Rs.):  39962.0
Maximum cost of petrol:  3669710.0
```

Q8. Write a Python program to calculate volume and area of a sphere. (Area= 4 πr^2),

(Volume= $4/3\pi r^3$)

Sample Output:
Radius of sphere: 5
Surface Area: 314.2857142857143
Volume : 523.8095238095237



Answer:

```
# ------------------------------------------------------------#
# List-Program No              : L1-P8
# Developed By           : Shesh Shiromani
# Date                   : 24th April 2024
# ------------------------------------------------------------#


R = float(input("Radius of the sphere: "))

A = 4*3.14159 * R**2
V = 4/3 * 3.14159 * R**3

print(("Surface area of the sphere: "),A)
print(("Surface Volume of the sphere: "),V)
```

Output:

```
Radius of the sphere: 84
Surface area of the sphere:  88668.23616
Surface Volume of the sphere:  2482710.6124799997
```

Q9. Write a program in to accept Qty of Fuel (in Litre) and Distance travelled (in KM) from the user, calculate and display the Average of the Vehicle (i.e. KM per Litre).

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P9
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

      L = float(input("Enter the quantity of fuel consumed (in L): "))
      D = float(input("Enter the distance travelled: "))

      avg = D/L

      print("Average of your car: ", avg, "Km/L")
```

Output:

```
      Enter the quantity of fuel consumed (in L): 2
      Enter the distance travelled: 2
      Average of your car:  1.0 Km/L
```

Q10. Write a program in to accept Marks of 5 subjects (each out of 100), calculate and display
(a) Total Marks obtained (b) Average Mark

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P10
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

      S1 = float(input("Enter the marks of subject 1: "))
      S2 = float(input("Enter the marks of subject 2: "))
      S3 = float(input("Enter the marks of subject 3: "))
      S4 = float(input("Enter the marks of subject 4: "))
      S5 = float(input("Enter the marks of subject 5: "))

      T = S1 + S2 + S3 + S4 + S5

      print("Total Marks obtained: ", T, "/500")
      print("Average Marks: ", T/5)
```

Output:

```
      Enter the marks of subject 1: 100
      Enter the marks of subject 2: 99
      Enter the marks of subject 3: 99
      Enter the marks of subject 4: 100
      Enter the marks of subject 5: 98
      Total Marks obtained:  496.0 /500
      Average Marks:  99.2
```

Q11. Write a program to allocate and display Block and Floor No on the basis of Customer Number. Assuming there are 10 Blocks ('A' to 'J') with 5 floors (0 to 4) each and allocated to customers sequentially as per their Customer Number. For example: Customer no 1 gets [Block A Floor 0], Customer no 3 gets [Block A Floor 2], Customer no 7 gets [Block B Floor 1]

Note: This program has to be done only using arithmetic operations and type conversions (i.e., with out use of if-else)

Hint: ASCII codes for 'A','B'.. are 65,66,... & chr(65) in python is 'A'

Answer:

```
# ----------------------------------------------------------------#
# List-Program No             : L1-P11
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ----------------------------------------------------------------#

customer_number = int(input("Enter your customer no.: "))


block_ = (customer_number - 1) // 5
flrno = (customer_number - 1) % 5


block = chr(65 + block_index)


print("Customer no", customer_number, "gets Block", block, "Floor", flrno)
```

Output:

```
Enter your customer no.: 3
Customer no 3 gets Block A Floor 2
```

Q12. Write a program to calculate total collection of a PARKING area on the basis of the number of vehicles under each category entered by the user. Per vehicle amounts for each type of vehicle is as follows: Bus Rs. 100 SUV Rs.40 CAR Rs.30 Two-Wheeler Rs.10

Sample Output:

```
Number of Buses        : 10
Number of SUVs         : 20
Number of Cars         : 45
Number of Two-Wheelers : 120
Collection for Buses       : 1000
Collection for SUVs        : 800
Collection for Cars        : 1350
Collection for Two-Wheelers: 1200
Total Collection           : 4350
```

Answer:

```
# ---------------------------------------------------------------#
# List-Program No              : L1-P12
# Developed By           : Shesh Shiromani
# Date                   : 24th April 2024
# ---------------------------------------------------------------#

a = int(input("Number of Buses :"))
b = int(input("Number of SUVs :"))
c = int(input("Number of Cars :"))
d = int(input("Number of Two-Wheelers : "))

xa = a*100
xb = b*40
xc = c*30
xd = d*10

print("Collection for Buses :", xa)
print("Collection for SUVs :", xb)
print("Collection for Cars :", xc)
print("Collection for Two-Wheelers :", xd)
print("Total Collection :", xa+xb+xc+xd)
```

Output:

```
Number of Buses :10
Number of SUVs :20
Number of Cars :30
Number of Two-Wheelers : 20
Collection for Buses : 1000
Collection for SUVs : 800
Collection for Cars : 900
Collection for Two-Wheelers : 200
Total Collection : 2900
```

Q13.Write a program to accept Basic Salary (Basic) of employee from user and calculate the following:

(a) Dearness Allowance (DA) as 30% of Basic
(b) House Rent Allowance (HRA) as 25% of Basic
(c) Income Tax (IT) as 10% of Basic if Basic<50000 and 20% of Basic if Basic>=50000
(d) Total Salary (TSAL) as BASIC+DA+HRA
(e) Salary in hand (SALH) as TSAL-IT

Answer:

```
# ------------------------------------------------------------#
# List-Program No              : L1-P13
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

      Basic = int(input("Enter you basic salary: "))
      DA = 0.3 * Basic
      HRA = 0.25 * Basic

      if Basic < 50000:
            IT = 0.1 * Basic

      elif Basic >= 50000:
            IT = 0.2 * 50000

      TSal = Basic + DA + HRA

      SalH = TSal - IT

      print("Regarding your Salary, Please find the calculations done below")

      print("Basic Salary entered by you: ", Basic)
      print("Dearness Allowance: ", DA)
      print("House rent: ", HRA)
      print("Income tax: ", IT)
      print("Total Salary: ", TSal)
      print("Your final salary in hand is: ", SalH)
```

Output:

```
Enter you basic salary: 60000
Regarding your Salary, Please find the calculations done below
Basic Salary entered by you:  60000
Dearness Allowance:  18000.0
House rent:  15000.0
Income tax:  10000.0
Total Salary:  93000.0
Your final salary in hand is:  83000.0
```

Q14. Write a program to accept marks of English (ENG), marks of Maths (MAT), marks of Science (SCI) each out of 100, calculate and display the following:

(a) Total Marks (TOT) as ENG+MAT+SCI
(b) Percentage of Marks (PER) as TOT/3

(c) Display Grade as 'A' if PER>50 'B' if PER>0 and 'C' if PER=0 [without using if_else command]

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P14
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

      E = int(input("English marks: "))
      M = int(input("Mathematics marks: "))
      S = int(input("Science marks: "))

      TOT = E+M+S

      Per = TOT/3

      print("Your total marks are: ", TOT)
      print("Your percentage is: ",Per)

      if Per >= 50:
        print("Grade A")

      elif Per > 0 :
        print("Grade B")

      else:
        print("Grade C")
```

Output:

```
      English marks: 90
      Mathematics marks: 93
      Science marks: 100
      Your total marks are:  283
      Your percentage is:  94.33333333333333
      Grade A
```

Q15. Write a program to accept the age of the individual and display a message "Allowed to get a license to Drive" if Age entered by the user >=18 else display a message "Wait for x years to get a Driving License". Here, x to be replaced with 18-Age years.

Answer:

```
# ----------------------------------------------------------------#
# List-Program No             : L1-P15
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ----------------------------------------------------------------#
```

```
age = int(input("Enter your age: "))

if age >= 18:
  print("You are eligible for a driving license")

elif age == 17:
  print("You are not eligible for a driving license. Please wait for 1 year to
get a driving license.")

else:
  print("You are not eligible for a driving license. Please wait for", 18-age,
"years to get a driving license.")
```

Output:

```
Enter your age: 45
You are eligible for a driving license
```

Q16. Write a program to accept the grade of a student out of 'A' to 'F' from the user and display the range of marks on the screen as per the following table using if else.

Grade	Marks Range
A	100-90
B	89-75
C	74-60
D	59-45
E	44-33
F	32-0

Answer:

```
# -----------------------------------------------------------------#
# List-Program No              : L1-P16
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# -----------------------------------------------------------------#

      G = str(input("Enter your grade: "))

      if G == "A":
        print("Your marks are in the range of 100 - 90")

      elif G == "B":
        print("Your marks are in the range of 89-75")

      elif G == "C":
        print("Your marks are in the range of 74-60")

      elif G == "D":
        print("Your marks are in the range of 59-45")

      elif G == "E":
        print("Your marks are in the range of 44-33")

      else:
        print ("Your marks are in the range of 32-0")
```

Output:

```
      Enter your grade: A
      Your marks are in the range of 100 - 90
```

Q17. Write a program to accept marks of a student out of 100, find and display Grades 'A' to 'F' as per the following grade table using if else.

Marks Range	Grade
100 -90	A
89.9-75	B
74.9-60	C
59.9-45	D
44.9-33	E
32.9-0	F

Answer:

```
# ------------------------------------------------------------------#
# List-Program No              : L1-P17
# Developed By           : Shesh Shiromani
# Date                   : 24th April 2024
# ------------------------------------------------------------------#
```

```
A = float(input("Enter Marks Obtained : "))
if A>90:
 print('Grade A')
elif A>75:
 print("Grade B")
elif A>60:
 print("Grade C")
elif A>45:
 print("Grade D")
elif A>33:
 print("Grade E")
else :
 print("Grade F")
```

Output:

```
Enter Marks Obtained : 90
Grade B
```

Q18. Write a program to make a calculator application with the following operations:

(a) Accept values of two real numbers

(b) Accept arithmetic operation to be performed out of '+','-','*','/','%'

(c) Perform the desired arithmetic operation on two real number and display the result of operation as selected by the user

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P18
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

      n1 = float(input("Enter a number: "))
      n2 = float(input("Enter a number: "))

      o = input("Enter the desired operator" )

      if o == "+":
        print(n1+n2)

      elif o == "-":
        print(n1-n2)

      elif o == "X":
        print(n1*n2)

      elif o == "/":
        print(n1/n2)
```

Output:

```
      Enter a number: 2
      Enter a number: 3
      Enter the desired operator+
      5.0
```

Q19. Write a program to display the Floor for the various items in a SHOPPING MALL on the basis of Age and Gender entered by user as per the following table:

Age	Gender	Floor
>=60	M	7
>=20 and <60	M	6
>=10 and <20	M	5
<10	M	4
>=58	F	3
>=18 and <58	F	2
>=10 and <18	F	1
<10	F	0

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P19
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#
      age = int(input("Enter your age: "))
      G = input("Enter your gender: M/F ")

      if age >=60 and G == "M":
        print ("7th floor")

      elif 60>age >= 20 and G == "M":
        print("6th floor")

      elif 20>age >= 10 and G == "M":
        print("5th floor")

      elif 10>age and G == "M":
        print("4th floor")

      elif age >=58 and G == "F":
        print ("3rd floor")

      elif 58>age >= 18 and G == "F":
        print("2nd floor")

      elif 18>age >= 10 and G == "F":
        print("1st floor")

      elif 10>age and G == "F":
        print("0th floor")
```

Output:

```
      Enter your age: 21
      Enter your gender: M/F M
      6th floor
```

Q20. Write a program to accept runs of three consecutive cricket matches, find and display the highest and lowest runs.

Sample Output:

Match 1 Runs: 320
Match 2 Runs: 210
Match 3 Runs: 275
Highest Runs: 320 Lowest Runs : 210

Answer:

```
# ------------------------------------------------------------#
# List-Program No             : L1-P20
# Developed By          : Shesh Shiromani
# Date                  : 24th April 2024
# ------------------------------------------------------------#

A = int(input("Enter the score of match 1: "))
B = int(input("Enter the score of match 2: "))
C = int(input("Enter the score of match 3: "))

if A > B and A>C:
  print("Maximum score in the given matches: ", A)

elif B > A and B>C:
  print("Maximum score in the given matches: ", B)

else:
  print("Maximum score in the given matches: ", C)

if A < B and A < C:
  print("Minimum score in the given matches: ", A)

elif B < A and B < C:
  print("Minimum score in the given matches: ", B)

else:
  print("Minimum score in the given matches: ", C)
```

Output:

```
Enter the score of match 1: 1
Enter the score of match 2: 2
Enter the score of match 3: 3
Maximum score in the given matches:  3
Minimum score in the given matches:  1
```

Q21. Write a program to display the BLOCK of buildings in school allocated for a particular group of students as per their class and stream entered by the user.

Class	Stream	Block
11	**'S'**	**F Block**
11	**'C'**	**E Block**
11	**'H'**	**D Block**
12	**'S'**	**C Block**
12	**'C'**	**B Block**
12	**'H'**	**A Block**

Sample Output:

Enter Class : 11
Enter Stream : H
Block : D Block

Answer:

```
# ------------------------------------------------------------------#
# List-Program No              : L1-P21
# Developed By          : Shesh Shiromani
# Date                  : 24th April
# ------------------------------------------------------------------#

      Class = input("Enter your class: ")
      Stream = input("Enter your stream: ")

      if Class == '11':
        if Stream == 'S':
          block = 'F'

        elif Stream == 'C':
          block = 'E'

        elif Stream == 'H':
          block = 'D'

      if Class == 12:
        if Stream == 'S':
          block = 'C'

        elif Stream == 'C':
          block = 'B'

        elif Stream == 'H':
          block = 'A'

      print("Your block is:",block, "block")
```

Output:

```
      Enter your class: 11
      Enter your stream: S
      Your block is: F block
```