Python for Class XII _ - Part 13

Topics:

Using Python libraries: create and import Python libraries. (Continued)

Importing Python Modules

There are Many Ways to Import a Module

Python provides at least three different ways to import modules.

import X imports the module X, and creates a reference to that module in the current namespace. Or in other words, after you've run this statement, you can use X.name to refer to things defined in module X.

```
# module: circle.py
from math import pi

def circumference(radius):
    return 2 * pi * radius

def area(radius):
    return pi * radius ** 2
```

```
# main_v1.py
# import module circle
import circle

r = float(input("Enter the radius of the circle: "))
print("Area of the circle(in sq. units) = %.2f" %circle.area(r))
print("Circumference of the circle = %.2f" %circle.circumference(r))
```

---

from X import * imports the module X, and creates references in the current namespace to all public objects defined by that module . Or in other words, after you've run this statement, you can simply use a plain name to refer to things defined in module X. But X itself is not defined, so X.name

doesn't work. And if name was already defined, it is replaced by the new version. And if name in X is changed to point to some other object, your module won't notice.

```
# module: circle.py
from math import pi

def circumference(radius):
    return 2 * pi * radius

def area(radius):
    return pi * radius ** 2
--------------------------------


# main_v2.py
# import module circle
from circle import *

r = float(input("Enter the radius of the circle: "))
print("Area of the circle(in sq. units) = %.2f" %area(r))
print("Circumference of the circle = %.2f" %circumference(r))
-----------------------------------------------------------------------
```

from X import a, b, c imports the module X, and creates references in the current namespace to the given objects. Or in other words, you can now use a and b and c in your program.

```
# module: circle.py
from math import pi

def circumference(radius):
    return 2 * pi * radius

def area(radius):
    return pi * radius ** 2
--------------------------------
# main_v3.py

# import module circle

from circle import area

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

print("Area of the circle(in sq. units) = %.2f" %area(r))

-------------------------------------------------------------
```

More Examples:

```
# module : area.py
import math

def circle_area(radius):
    return math.pi * radius ** 2

def square_area(side):
    return side ** 2

def rect_area(length, breadth):
    return length * breadth

def tri_area(a, b, c):
    s = (a + b + c) / 2
    return math.sqrt(s * (s -a) * (s - b) * (s -c))
-----------------------------------------------------
# main_prog3.py
# import area module
import area

r = float(input("Enter the radius of the circle: "))
print("Area of the circle(in sq. units) = %.2f\n" %area.circle_area(r))

side = float(input("Enter the side of the square: "))
print("Area of the square (in sq. units) %.2f\n" %area.square_area(side))

length = float(input("Enter the length of the rectangle: "))
breadth = float(input("Enter the breadth of the rectangle: "))
print("Area of the rectangle (in sq. units) %.2f\n" %area.rect_area(length,
breadth))

print("Enter the sides of the triangle")
a = float(input("First side: "))
b = float(input("Second side: "))
c = float(input("Third side: "))
print("Area of the triangle(in sq. units) %.2f\n" %area.tri_area(a, b, c))
-------------------------------------------------------------------------
# main_prog4.py
# import area module
from area import *
```

```
r = float(input("Enter the radius of the circle: "))
print("Area of the circle(in sq. units) = %.2f\n" %circle_area(r))

side = float(input("Enter the side of the square: "))
print("Area of the square (in sq. units) %.2f\n" %square_area(side))

length = float(input("Enter the length of the rectangle: "))
breadth = float(input("Enter the breadth of the rectangle: "))
print("Area of the rectangle (in sq. units) %.2f\n" %rect_area(length,
breadth))

print("Enter the sides of the triangle")
a = float(input("First side: "))
b = float(input("Second side: "))
c = float(input("Third side: "))
print("Area of the triangle(in sq. units) %.2f\n" %tri_area(a, b, c))
-------------------------------------------------------------------------
# main_prog5.py
# import area module
from area import circle_area, tri_area

r = float(input("Enter the radius of the circle: "))
print("Area of the circle(in sq. units) = %.2f\n" %circle_area(r))



print("Enter the sides of the triangle")
a = float(input("First side: "))
b = float(input("Second side: "))
c = float(input("Third side: "))
print("Area of the triangle(in sq. units) %.2f\n" %tri_area(a, b, c))
-------------------------------------------------------------------------
```

Note: The concept of namespace will be discussed later.