SESSION - 3
SHAPES

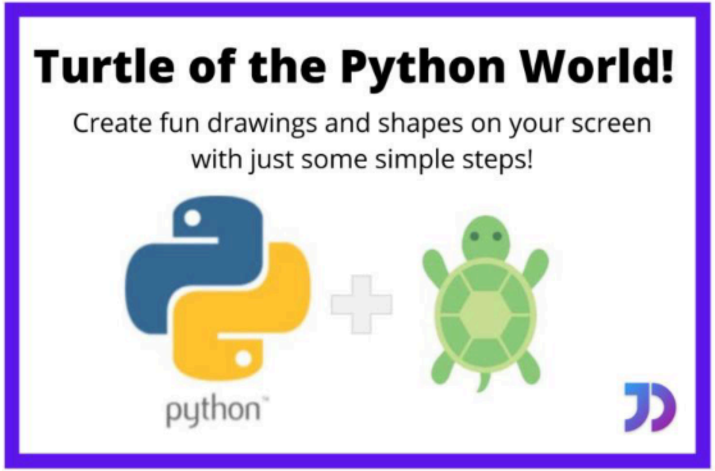
Learning Outcomes:

- **Remember**: The students will recall about the libraries learnt .
- **Understand**: They will focus on understanding the Turtle Library and the Coordinate system .
- **Apply**: They will learn to apply Turtle Library for drawing shapes.
- **Analyze**: They will check their understanding by developing a code .
- **Create**: They will create the code in EduBlocks

Remember & Understanding

TURTLE BLOCK

- **“Turtle”** is a Python feature like a drawing board, which lets us command a turtle to draw all over it!
- It is a pre-installed Python library that enables users to create pictures and shapes by providing them with a virtual canvas.
- The onscreen pen that you use for drawing is called the turtle and this is what gives the library its name.


Turtle of the Python World!
Create fun drawings and shapes on your screen with just some simple steps!
python™

TURTLE METHOD

- We can use functions like turtle.forward(…) and turtle.right(…) which can move the turtle around. Commonly used turtle methods are :

Method	Parameter	Description
Turtle()	None	Creates and returns a new turtle object
forward()	amount	Moves the turtle forward by the specified amount
backward()	amount	Moves the turtle backward by the specified amount
right()	angle	Turns the turtle clockwise
left()	angle	Turns the turtle counterclockwise

TURTLE METHOD

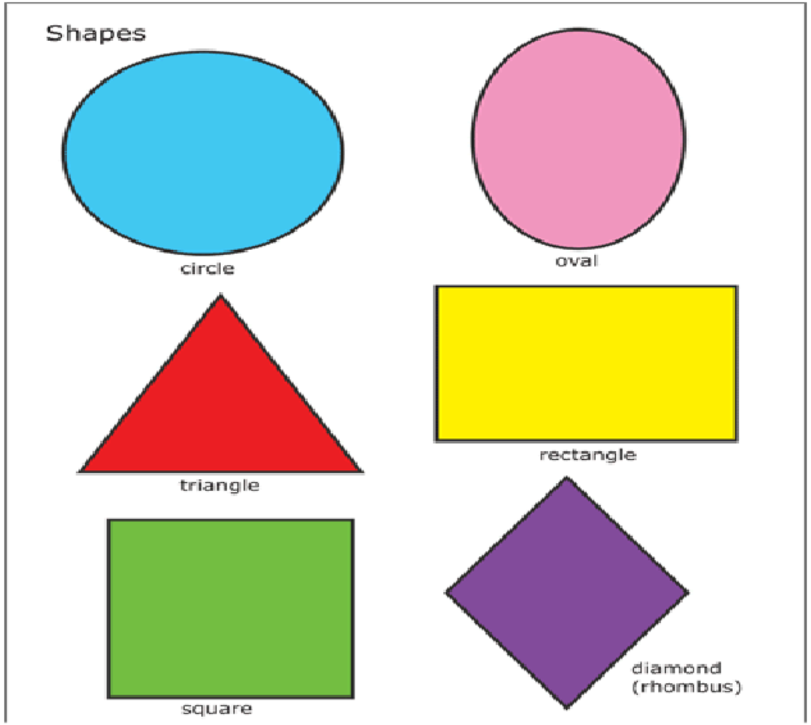
Method	Parameter	Description
penup()	None	Picks up the turtle’s Pen
pendown()	None	Puts down the turtle’s Pen
up()	None	Picks up the turtle’s Pen
down()	None	Puts down the turtle’s Pen
color()	Color name	Changes the color of the turtle’s pen
fillcolor()	Color name	Changes the color of the turtle will use to fill a polygon

TURTLE METHOD

Method	Parameter	Description
heading()	None	Returns the current heading
position()	None	Returns the current position
goto()	x, y	Move the turtle to position x,y
begin_fill()	None	Remember the starting point for a filled polygon
end_fill()	None	Close the polygon and fill with the current fill color
dot()	None	Leave the dot at the current position

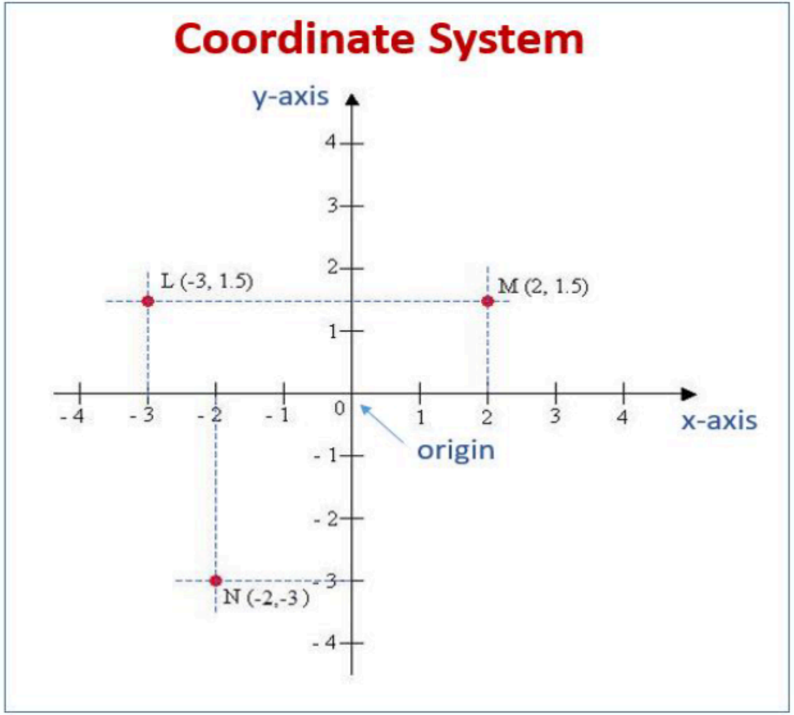
DRAWING SHAPES

Shapes are also known as geometric shapes and figures made up of fixed lines or curves.



COORDINATE SYSTEMS

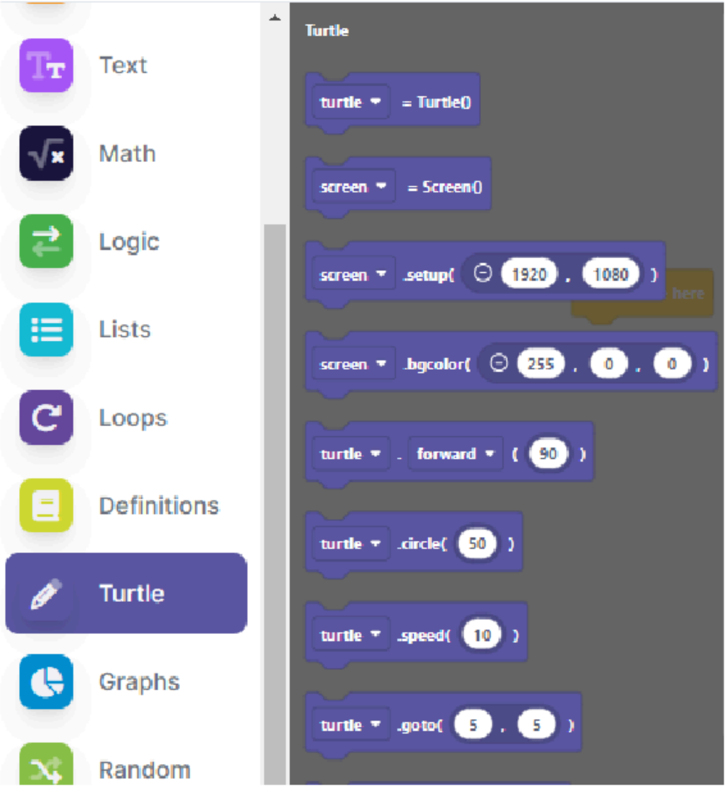
A coordinate system is a method for identifying the location of a point



PLOTTING A TURTLE

- **Plotting using Turtle**
  - To make use of the turtle methods and functionalities, we need to import turtle.
  - The 4 steps for executing a turtle

    program is as follows:-
    - Import the turtle module
    - Create a turtle to control.
    - Draw around using the turtle methods.
    - Run turtle.done().



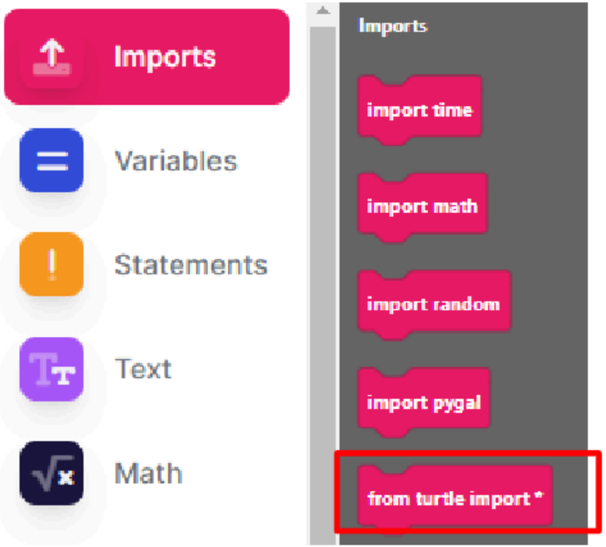
```
turtle ▾ = Turtle()
screen ▾ = Screen()
screen ▾ .setup( ⊖ 1920 , 1080 )
screen ▾ .bgcolor( ⊖ 255 , 0 , 0 )
turtle ▾ . forward ▾ ( 90 )
turtle ▾ .circle( 50 )
turtle ▾ .speed( 10 )
turtle ▾ .goto( 5 , 5 )
```

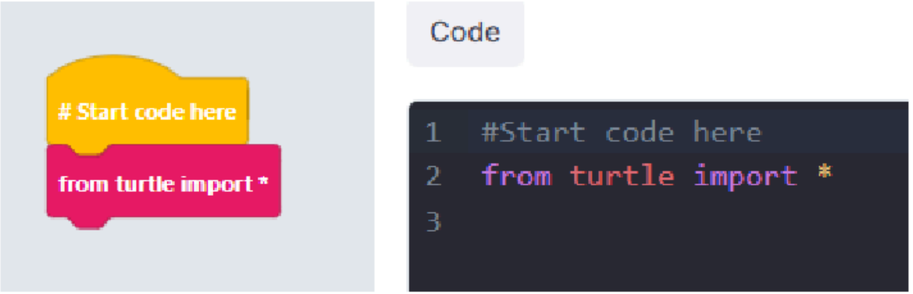
Apply & Create

TASK 01:-

</> WRITE A CODE TO CREATE A SQUARE SHAPE

Program Step 1

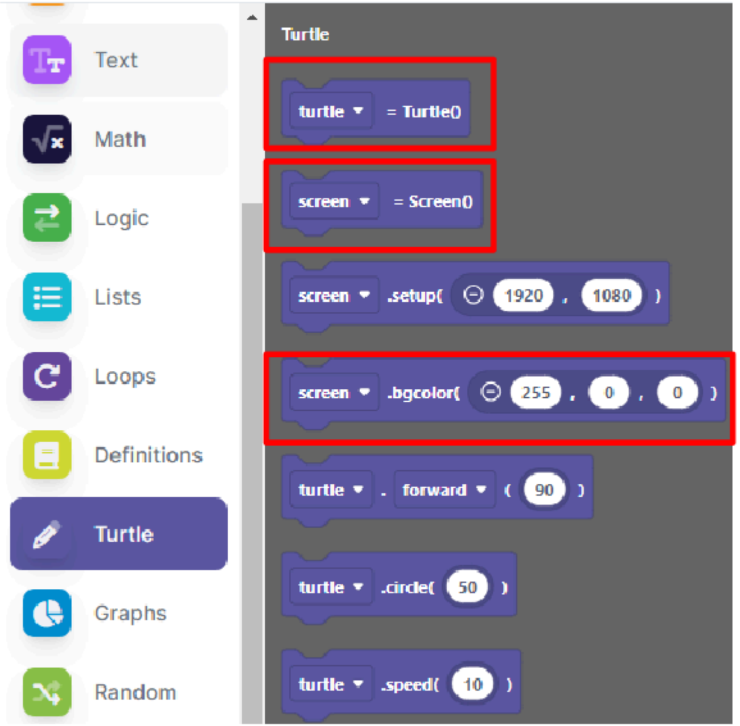


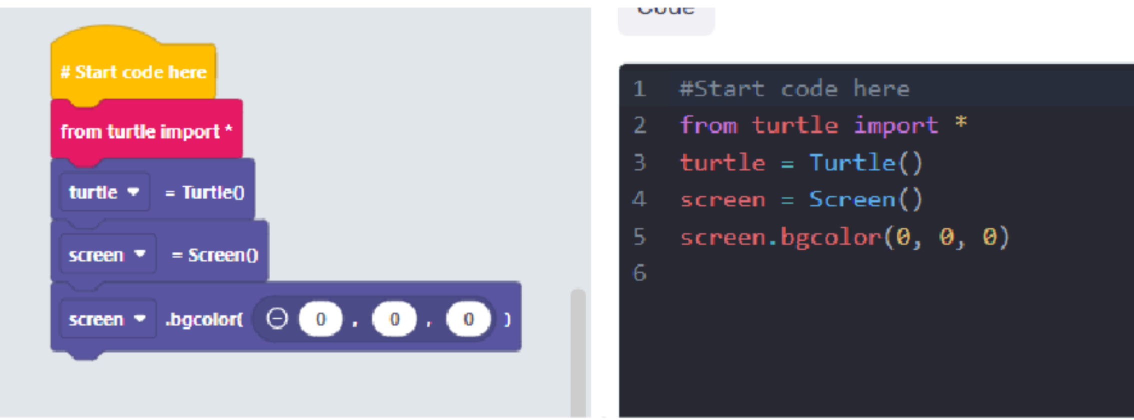


```
#Start code here
from turtle import *

```

1.Import turtle library

Program Step 2

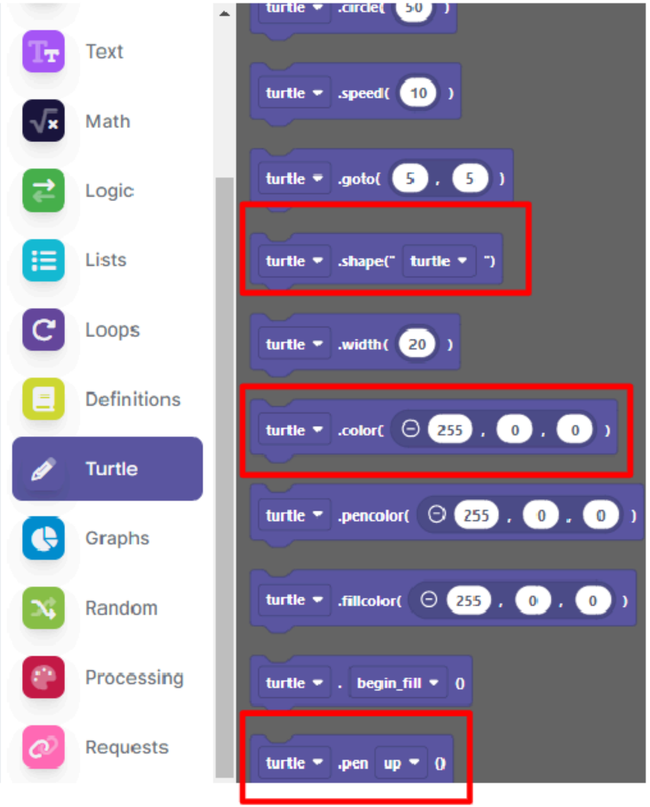


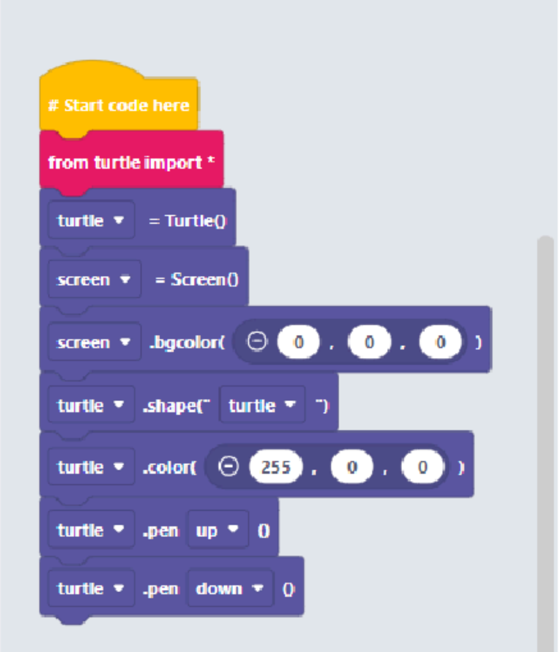


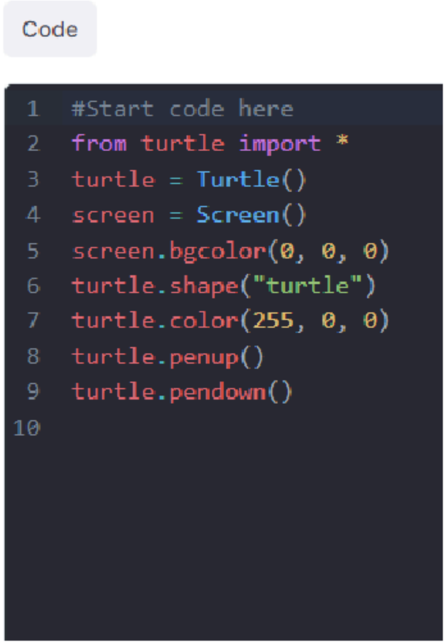
```
#Start code here
from turtle import *
turtle = Turtle()
screen = Screen()
screen.bgcolor(0, 0, 0)

```

1.Import turtle library

Program Step 2





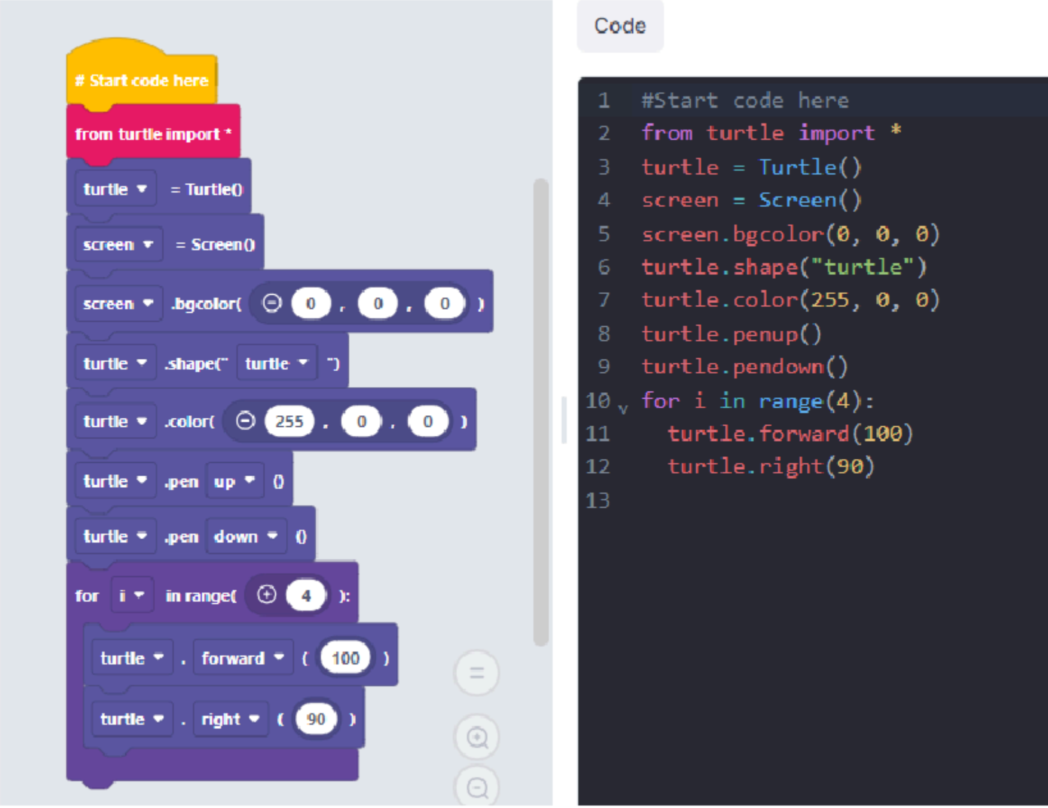


```
#Start code here
from turtle import *
turtle = Turtle()
screen = Screen()
screen.bgcolor(0, 0, 0)
turtle.shape("turtle")
turtle.color(255, 0, 0)
turtle.penup()
turtle.pendown()

```

1.Assign turtle shape
2.Assign turtle color to red
3.Pen up for not drawing
4.Pen down for drawing

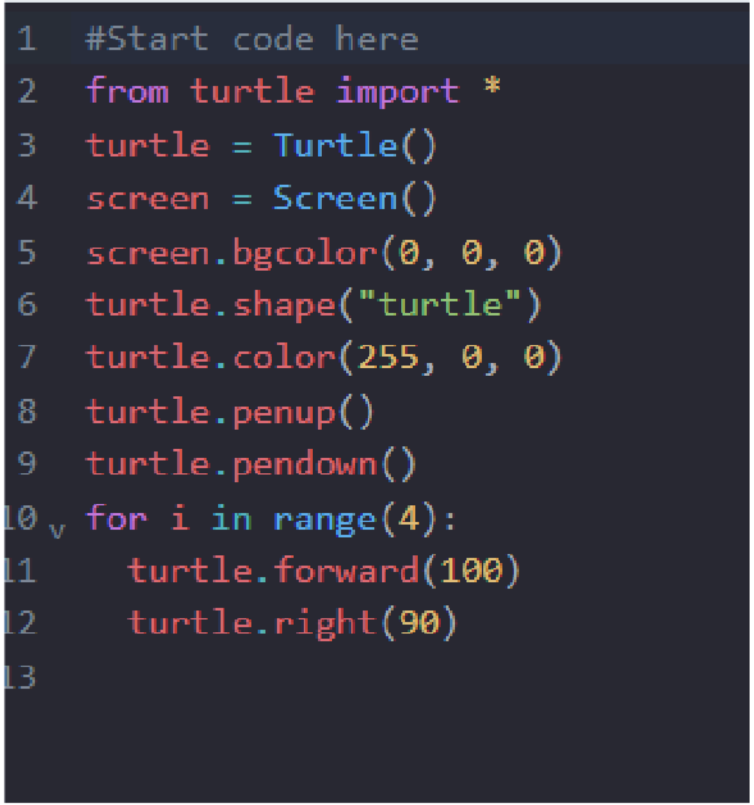
Program Step 3

1.Run a loop for 4 times, to move forward and take turn



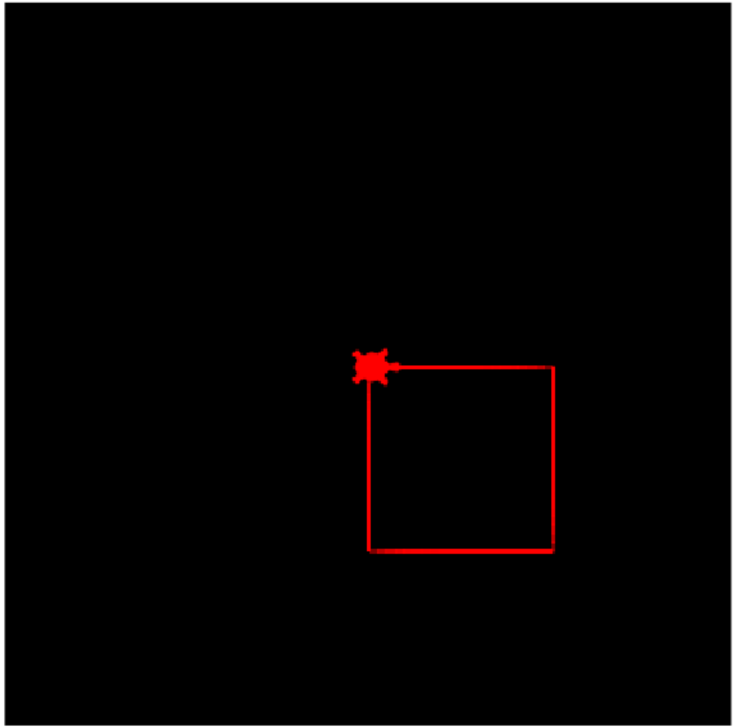
```
#Start code here
from turtle import *
turtle = Turtle()
screen = Screen()
screen.bgcolor(0, 0, 0)
turtle.shape("turtle")
turtle.color(255, 0, 0)
turtle.penup()
turtle.pendown()
for i in range(4):
  turtle.forward(100)
  turtle.right(90)
```

Syntax Code



```python
#Start code here
from turtle import *
turtle = Turtle()
screen = Screen()
screen.bgcolor(0, 0, 0)
turtle.shape("turtle")
turtle.color(255, 0, 0)
turtle.penup()
turtle.pendown()
for i in range(4):
  turtle.forward(100)
  turtle.right(90)

```

Output



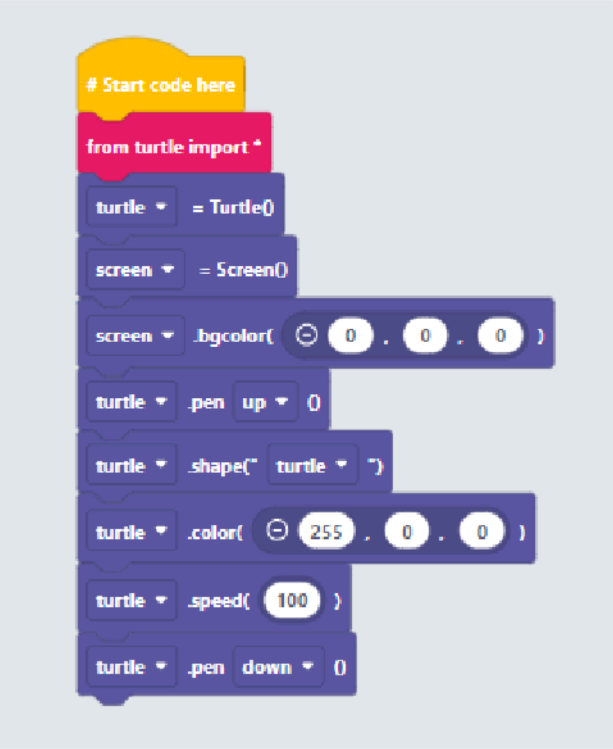
Apply & Create

TASK 02:-

</> WRITE A CODE TO DRAW A STAR SHAPE

Program Step 1

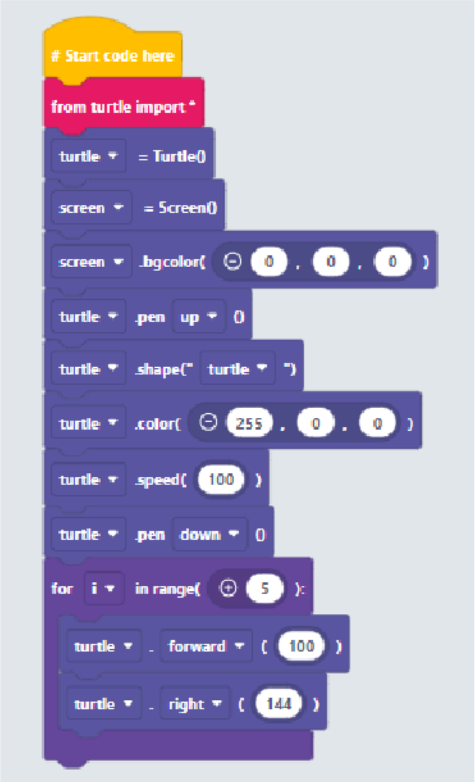
1. Import turtle library
2. Call the turtle
3. Call the screen
4. Set Screen background color to Black: (R,G,B)= (0,0,0)
5. Stop drawing using pen up
6. Set turtle shape of your drawing tool
7. Set turtle color to Red: (R,G,B)= (255,0,0)
8. Set turtle speed to 100 (drawing speed)
9. Start drawing using pen up



```
# Start code here
from turtle import *
turtle = Turtle()
screen = Screen()
screen.bgcolor(0, 0, 0)
turtle.penup()
turtle.shape("turtle")
turtle.color(255, 0, 0)
turtle.speed(100)
turtle.pendown()
```

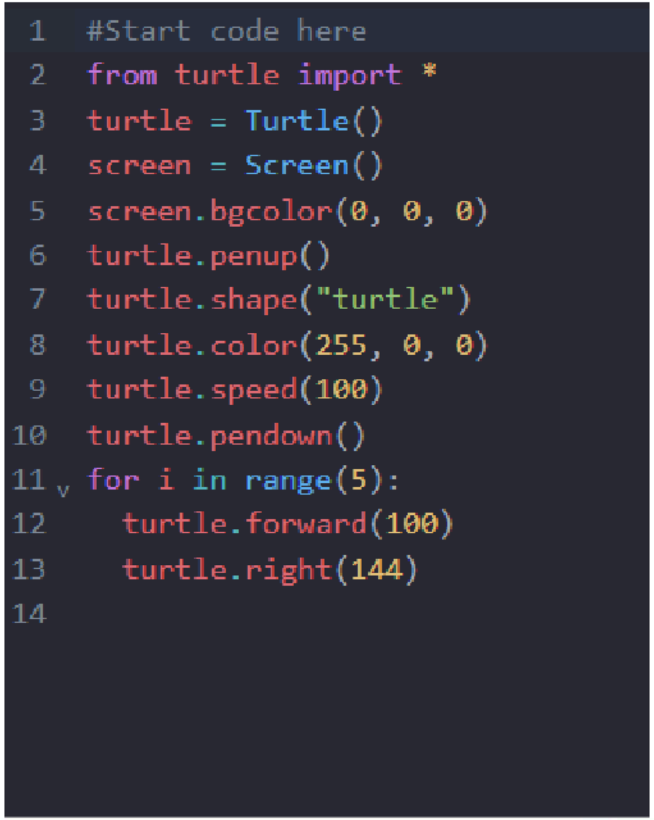
Program Step 2

1.Run a loop for 5 times, as star shape have 5 sides
2.Draw straight and take a turn
3.After that stop drawing by using pen up
4.Make your turtle move to 50,50 position



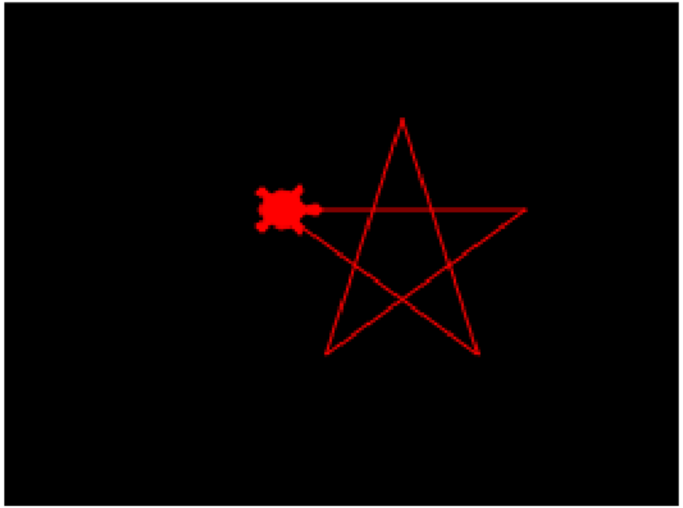
```
# Start code here
from turtle import *
turtle = Turtle()
screen = Screen()
screen .bgcolor( 0 , 0 , 0 )
turtle .pen up ()
turtle .shape(" turtle ")
turtle .color( 255 , 0 , 0 )
turtle .speed( 100 )
turtle .pen down ()
for i in range( 5 ):
    turtle . forward ( 100 )
    turtle . right ( 144 )
```

Syntax



```python
#Start code here
from turtle import *
turtle = Turtle()
screen = Screen()
screen.bgcolor(0, 0, 0)
turtle.penup()
turtle.shape("turtle")
turtle.color(255, 0, 0)
turtle.speed(100)
turtle.pendown()
for i in range(5):
  turtle.forward(100)
  turtle.right(144)

```

Output



ACTIVITY SHEETS

Question 1:

what is turtle tool?

A. draw tool
B. Gaming tool
C. Writing tool
D. Animation tool

Question 2:-
which of the following instruction is correct for setting screen color to BLack?

A. screen.bgcolor(255, 0, 0)
B. screen.bgcolor(0, 0, 0)
C. screen.color(0, 0, 0)
D. screen.bgcolor(255, 255, 255)

Question 3:-

What is the use of **goto()** instruction?

A. takes turtle to specific position

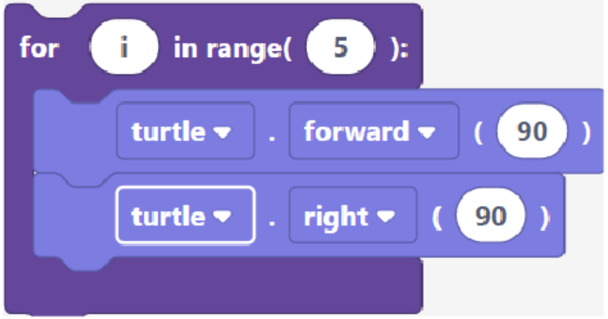
B. takes turtle to starting position

C. takes turtle to random position

D. takes turtle to ending position

Question 4:-

Find the error in the Square shape code shown below-



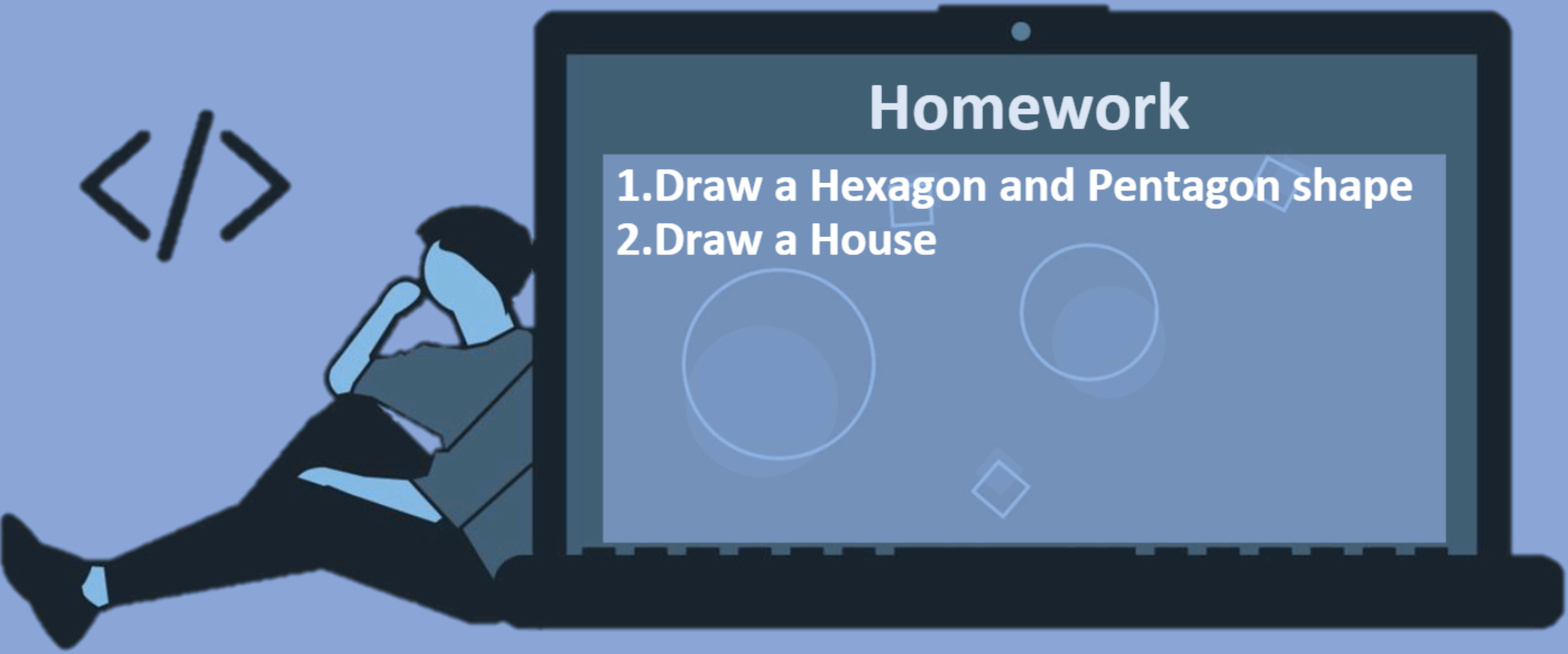
```
for i in range( 5 ):
    turtle . forward ( 90 )
    turtle . right ( 90 )
```

Question 5:

Can we change turtle to any other form?

A. Yes

B. No



Homework

1.Draw a Hexagon and Pentagon shape

2.Draw a House