

**This assignment has three parts.**

**Part One:** Write a program to draw a picture by defining functions and using Turtle Graphics. Use the following guidelines to write your program.

1. Give your artwork a name. Print the name to the output.
2. Draw a picture using the turtle. You can pick the subject of your picture. Some suggestions include a house, a car, a face, a robot.
3. At least two programmer-defined functions must be used.
4. The picture should include color.

**Insert your pseudocode here:**

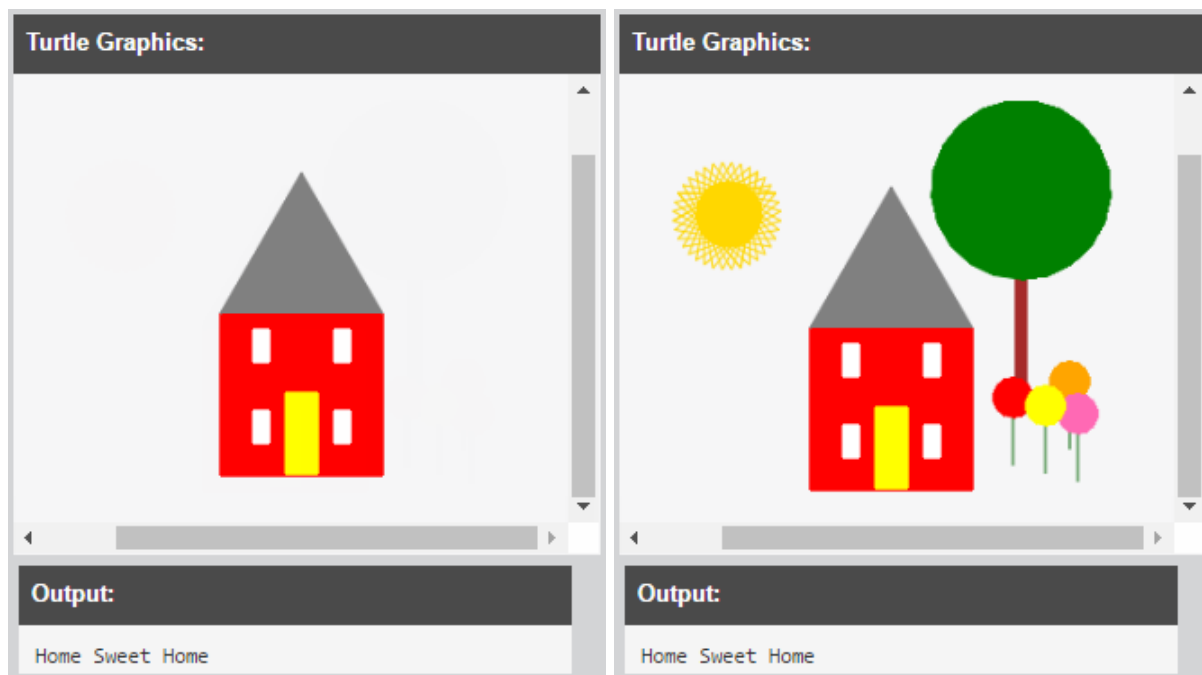
- **Import turtle**
- **Set pen to turtle#Turtle**
- **Set penspeed to 3**
- **Define draw\_square using parameters t: Turtle side\_length and color**
  - **Turtle fill color set to color**
  - **Turtle begin fill**
  - **For index in a range of 4**
    - **Go forward side\_length**
    - **Turn right 90°**
  - **End fill**
- **Define draw\_triange parameters t: Turtle side\_length and color**
  - **Turtle fill color set to color**
  - **Turtle begin fill**
  - **For index in range of 3**
    - **Go forward side\_length**
    - **Turn left 120**
  - **End fill**
- **Define draw\_house**
  - **Penup**
  - **Goto -50 50**
  - **Pendown**
  - **Call draw\_square using pen 100 and lightgrey**
- **Define draw\_roof**
  - **Penup**

- Goto -60 50
- Pendown
- Call draw\_triangle using pen 120 and brown
- Define draw\_sun
  - Penup
  - Goto 80 150
  - Pendown
  - Set fill color to yellow
  - Begin fill
  - Circle 30
  - End fill
- Define draw\_window
  - Penup
  - Goto -30 15
  - Pendown
  - Call draw\_square using pen 30 and white
  - Penup
  - Goto 0,0
  - Pendown
  - Goto -30 0
  - Penup
  - Goto -15 15
  - Pendown
  - Goto -15,-15
- Print "Drawing: Sunny House"
- Call draw\_house
- Call draw\_roof
- Call draw\_window
- Call draw\_sun
- hideturtle

**Part Two:** Code the program. Use the following guidelines to code your program.

1. To code the program, use the Python IDLE.
2. Using comments, type a heading that includes your name, today's date, and a short description of the program.
3. Follow the Python style conventions regarding indentation and the use of white space to improve readability.
4. Use meaningful variable names.

**Example of expected output:** The output for your program should resemble the following screen shot. Your specific results will vary depending on the choices you make and the input provided.



Insert a copy of your code from IDLE here:

```
import turtle

# Create a turtle object

pen = turtle.Turtle()

pen.speed(3)
```

```
# Function to draw a square (used for walls, windows)
```

```
def draw_square(t, side_length, color):
```

```
    t.fillcolor(color)
```

```
    t.begin_fill()
```

```
    for _ in range(4):
```

```
        t.forward(side_length)
```

```
        t.right(90)
```

```
    t.end_fill()
```

```
# Function to draw a triangle (used for roof)
```

```
def draw_triangle(t, side_length, color):
```

```
    t.fillcolor(color)
```

```
    t.begin_fill()
```

```
    for _ in range(3):
```

```
        t.forward(side_length)
```

```
        t.left(120)
```

```
    t.end_fill()
```

```
# Function to draw the house body
```

```
def draw_house():
```

```
    pen.penup()
```

```
    pen.goto(-50, 50)
```

```
    pen.pendown()
```

```
    draw_square(pen, 100, "lightgrey") # House walls

# Function to draw the roof
def draw_roof():

    pen.penup()

    pen.goto(-60, 50)

    pen.pendown()

    draw_triangle(pen, 120, "brown") # Roof

# Function to draw a sun (circle shape)
def draw_sun():

    pen.penup()

    pen.goto(80, 150)

    pen.pendown()

    pen.fillcolor("yellow")

    pen.begin_fill()

    pen.circle(30)

    pen.end_fill()

# Function to draw the window
def draw_window():

    pen.penup()

    pen.goto(-30, 15)

    pen.pendown()
```

```
draw_square(pen, 30, "white") # Window

pen.penup()

pen.goto(0,0)

pen.pendown()

pen.goto(-30,0)

pen.penup()

pen.goto(-15,15)

pen.pendown()

pen.goto(-15,-15)


# Drawing the picture

print("Drawing: Sunny House")

draw_house()

draw_roof()

draw_window()

draw_sun()


# Hide the turtle after drawing

pen.hideturtle()
```

**Part Three:** Complete the Post Mortem Review (PMR). Write thoughtful two to three sentence responses to all the questions in the PMR chart.

Review Question	Response
What was the purpose of your program?	Draw a sunny house that i guess resembles my house.
How could your program be useful in the real world?	My program could allow people to draw shapes easier with functions.
What is a problem you ran into and how did you fix it?	The ways the coordinates were done they were a little confusing and at some points they were completely off.
Describe one thing you would do differently the next time you write a program.	Try to use algorithms to make the program more efficient.