Homework # 12

01286121 Computer Programming

Software Engineering Program,

Department of Computer Engineering,

School of Engineering, KMITL

By

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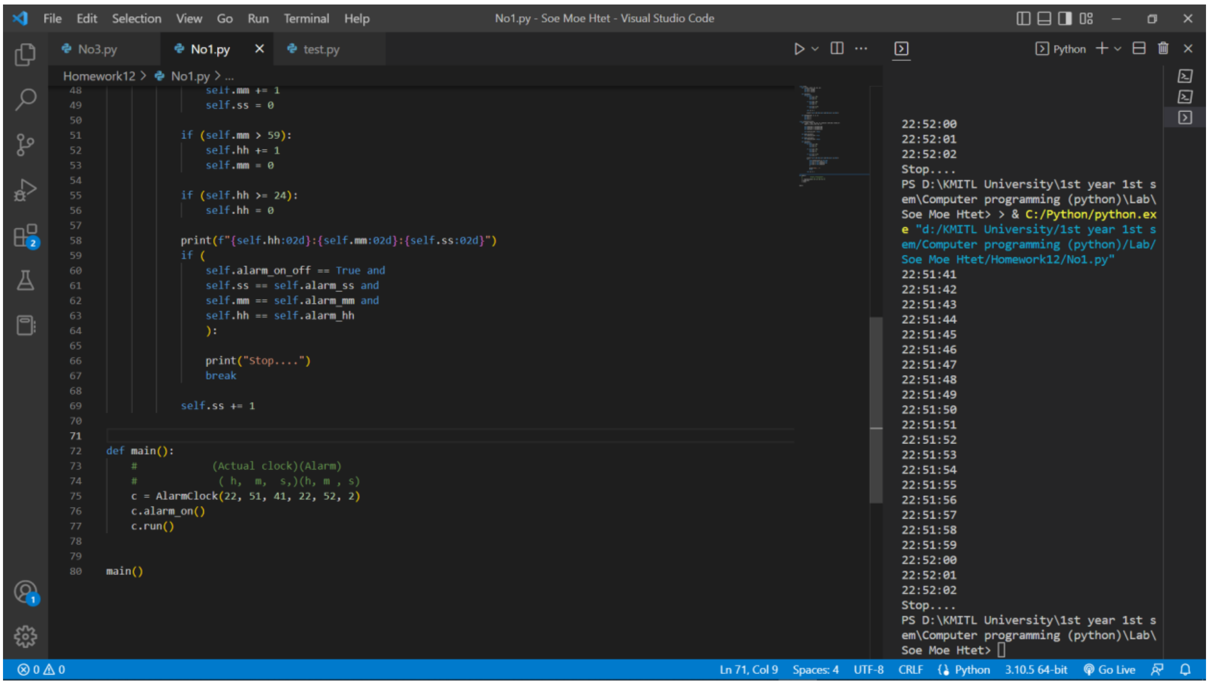
(Nickname – Stephen)

No1.

Result:

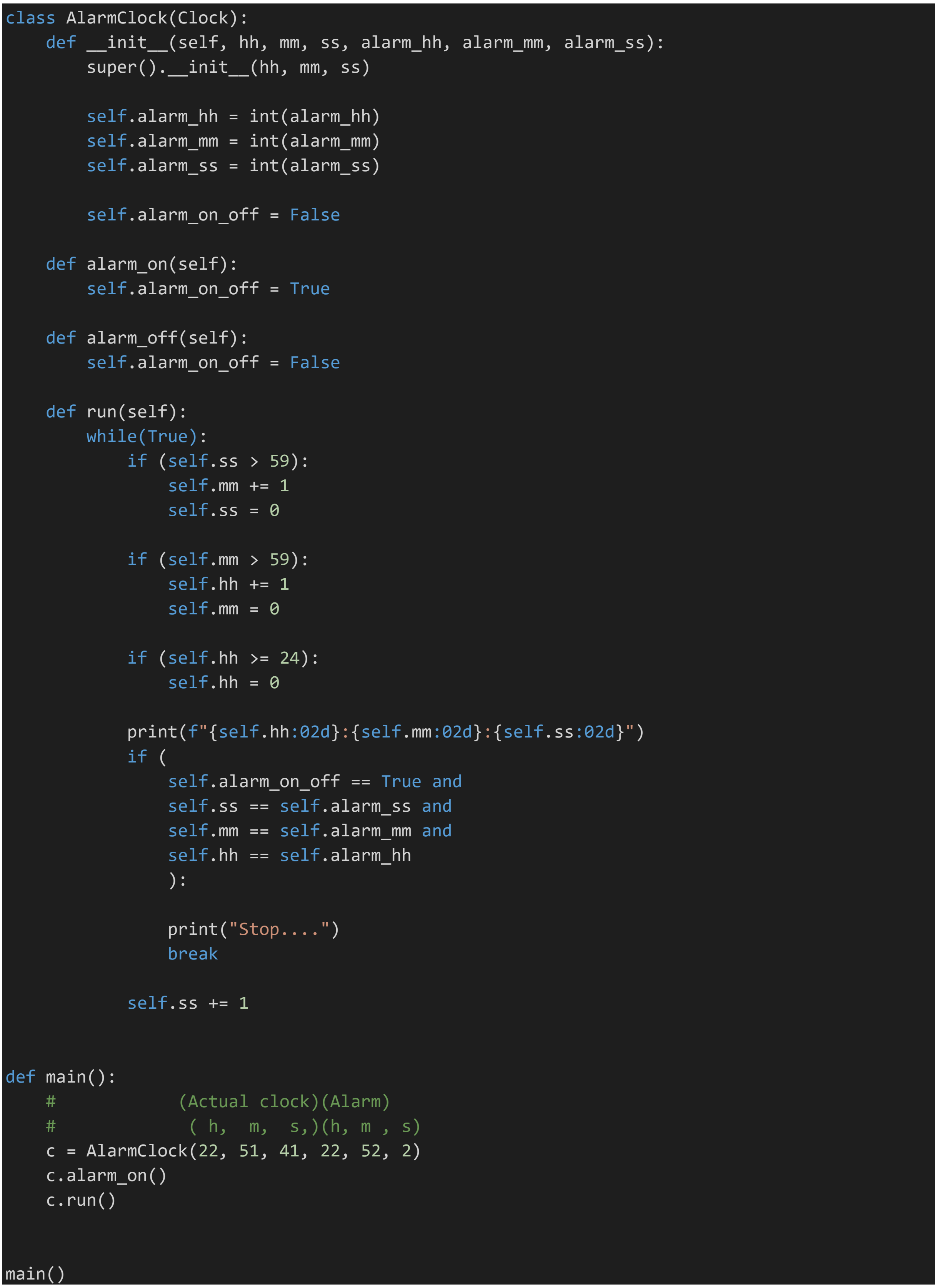


```
                self.mm += 1
                self.ss = 0

            if (self.mm > 59):
                self.hh += 1
                self.mm = 0

            if (self.hh >= 24):
                self.hh = 0

            print(f"{self.hh:02d}:{self.mm:02d}:{self.ss:02d}")
            if (
                self.alarm_on_off == True and
                self.ss == self.alarm_ss and
                self.mm == self.alarm_mm and
                self.hh == self.alarm_hh
                ):

                print("Stop....")
                break

            self.ss += 1


def main():
    #          (Actual clock)(Alarm)
    #           ( h,  m,  s,)(h, m , s)
    c = AlarmClock(22, 51, 41, 22, 52, 2)
    c.alarm_on()
    c.run()


main()
```

```
22:52:00
22:52:01
22:52:02
Stop....
PS D:\KMITL University\1st year 1st s
em\Computer programming (python)\Lab\
Soe Moe Htet> > & C:/Python/python.ex
e "d:/KMITL University/1st year 1st s
em/Computer programming (python)/Lab/
Soe Moe Htet/Homework12/No1.py"
22:51:41
22:51:42
22:51:43
22:51:44
22:51:45
22:51:46
22:51:47
22:51:48
22:51:49
22:51:50
22:51:51
22:51:52
22:51:53
22:51:54
22:51:55
22:51:56
22:51:57
22:51:58
22:51:59
22:52:00
22:52:01
22:52:02
Stop....
PS D:\KMITL University\1st year 1st s
em\Computer programming (python)\Lab\
Soe Moe Htet> 
```

Code:

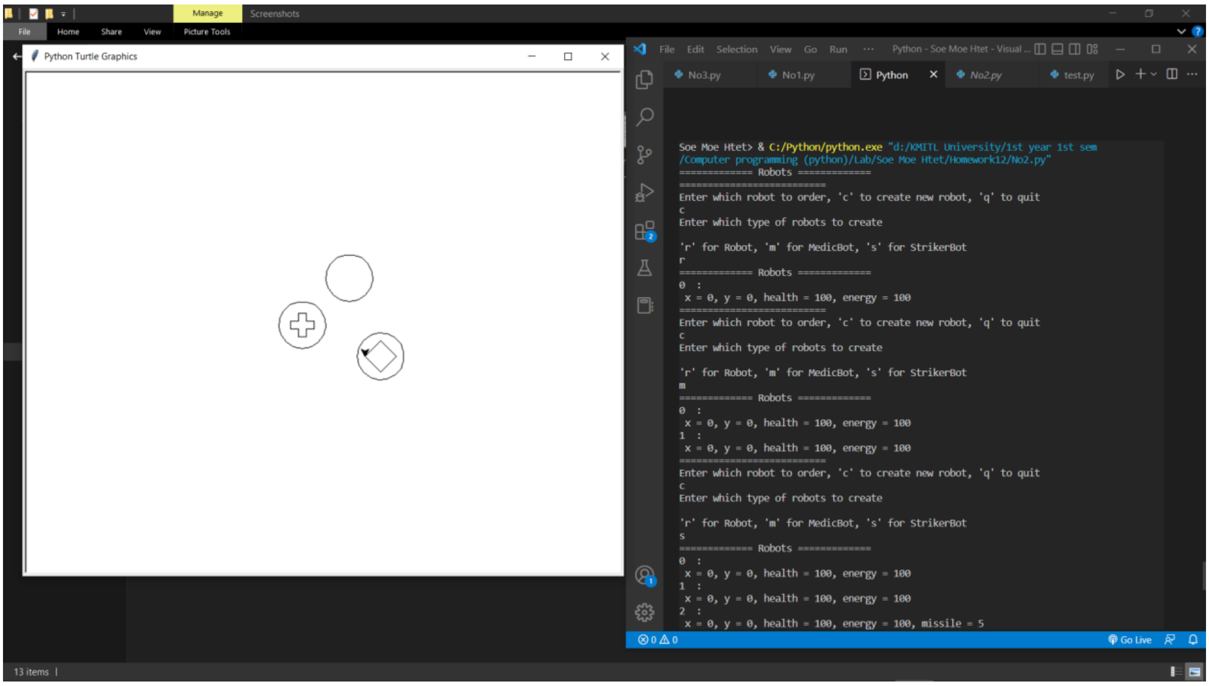
```
class Clock:
    def __init__(self, hh, mm, ss):
        self.hh = int(hh)
        self.mm = int(mm)
        self.ss = int(ss)

    def run(self):
        while(True):
            if (self.ss > 59):
                self.mm += 1
                self.ss = 0

            if (self.mm > 59):
                self.hh += 1
                self.mm = 0

            if (self.hh >= 24):
                self.hh = 0

            self.ss += 1

            print(f"{self.hh:02d}:{self.mm:02d}:{self.ss:02d}")

    def setTime(self, h, m, s):
        self.hh = h
        self.mm = m
        self.ss = s
```



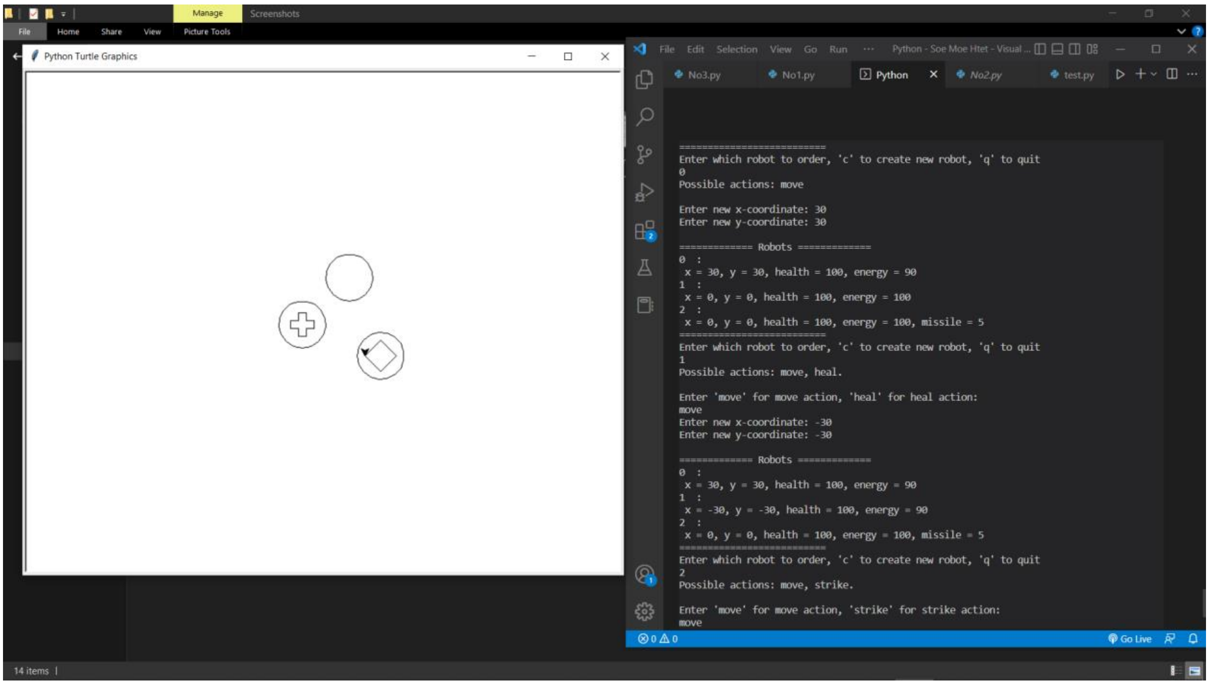
```
class AlarmClock(Clock):
    def __init__(self, hh, mm, ss, alarm_hh, alarm_mm, alarm_ss):
        super().__init__(hh, mm, ss)

        self.alarm_hh = int(alarm_hh)
        self.alarm_mm = int(alarm_mm)
        self.alarm_ss = int(alarm_ss)

        self.alarm_on_off = False

    def alarm_on(self):
        self.alarm_on_off = True

    def alarm_off(self):
        self.alarm_on_off = False

    def run(self):
        while(True):
            if (self.ss > 59):
                self.mm += 1
                self.ss = 0

            if (self.mm > 59):
                self.hh += 1
                self.mm = 0

            if (self.hh >= 24):
                self.hh = 0

            print(f"{self.hh:02d}:{self.mm:02d}:{self.ss:02d}")
            if (
                self.alarm_on_off == True and
                self.ss == self.alarm_ss and
                self.mm == self.alarm_mm and
                self.hh == self.alarm_hh
                ):

                print("Stop....")
                break

            self.ss += 1


def main():
    #            (Actual clock)(Alarm)
    #             ( h,  m,  s,)(h, m , s)
    c = AlarmClock(22, 51, 41, 22, 52, 2)
    c.alarm_on()
    c.run()


main()
```

No.2

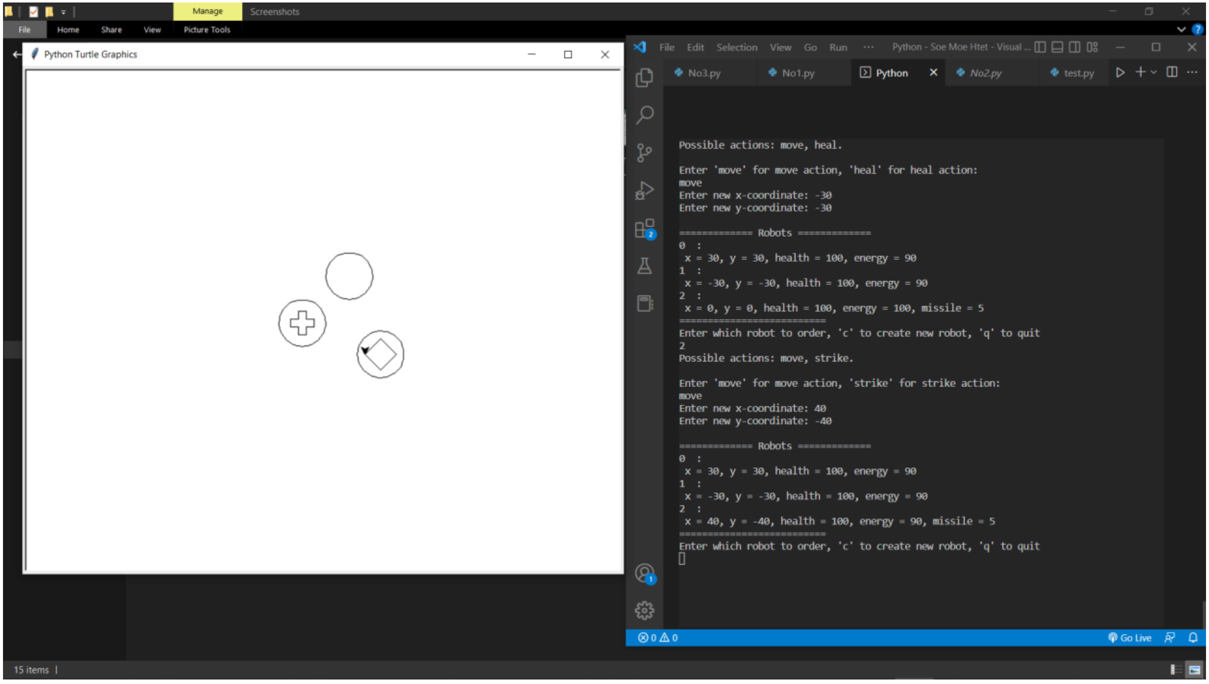
Result:



```
Soe Moe Htet> & C:/Python/python.exe "d:/KMITL University/1st year 1st sem
/Computer programming (python)/Lab/Soe Moe Htet/Homework12/No2.py"
============ Robots ============
==========================
Enter which robot to order, 'c' to create new robot, 'q' to quit
c
Enter which type of robots to create

'r' for Robot, 'm' for MedicBot, 's' for StrikerBot
r
============ Robots ============
0  :
 x = 0, y = 0, health = 100, energy = 100
==========================
Enter which robot to order, 'c' to create new robot, 'q' to quit
c
Enter which type of robots to create

'r' for Robot, 'm' for MedicBot, 's' for StrikerBot
m
============ Robots ============
0  :
 x = 0, y = 0, health = 100, energy = 100
1  :
 x = 0, y = 0, health = 100, energy = 100
==========================
Enter which robot to order, 'c' to create new robot, 'q' to quit
c
Enter which type of robots to create

'r' for Robot, 'm' for MedicBot, 's' for StrikerBot
s
============ Robots ============
0  :
 x = 0, y = 0, health = 100, energy = 100
1  :
 x = 0, y = 0, health = 100, energy = 100
2  :
 x = 0, y = 0, health = 100, energy = 100, missile = 5
```

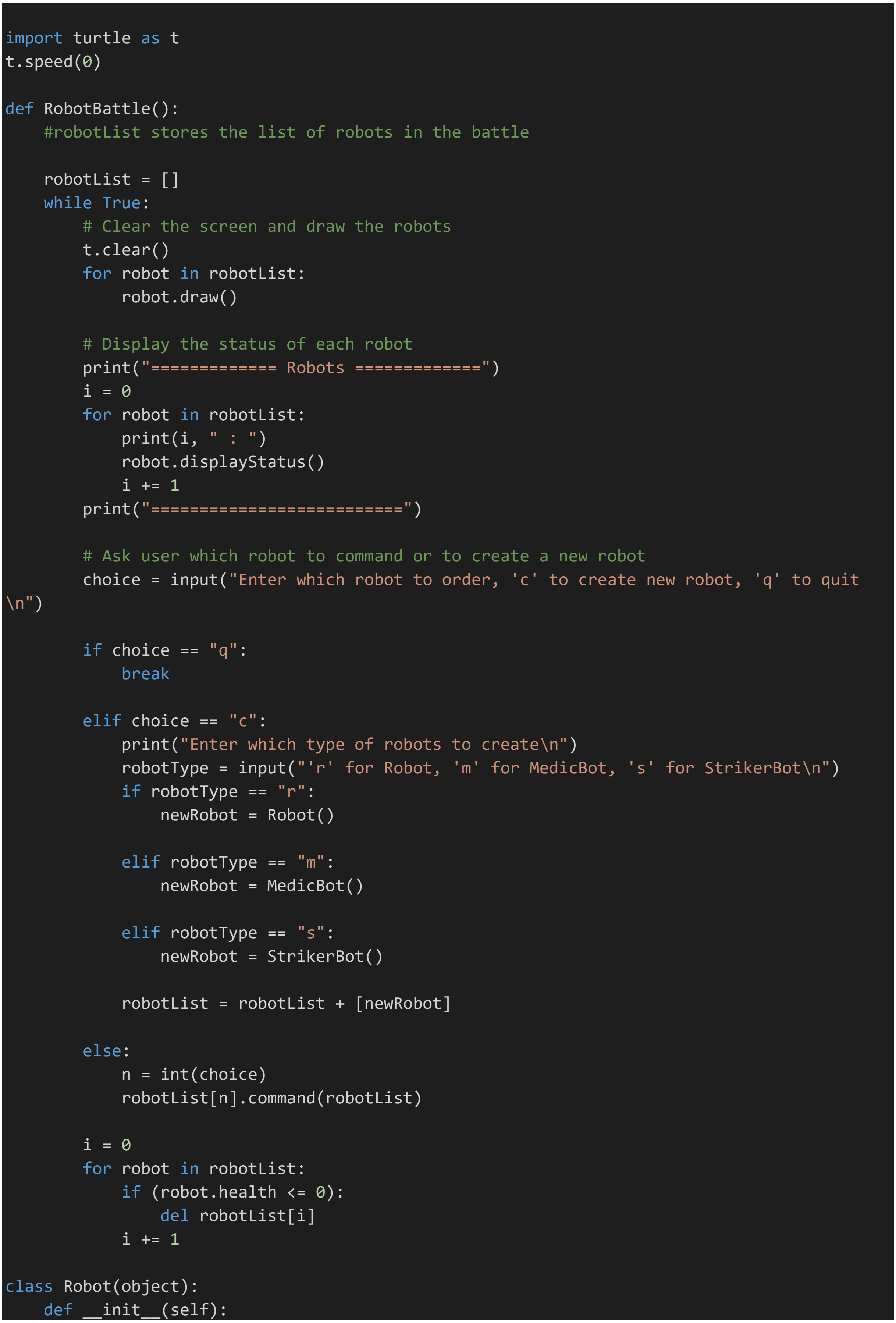


```
==========================
Enter which robot to order, 'c' to create new robot, 'q' to quit
0
Possible actions: move

Enter new x-coordinate: 30
Enter new y-coordinate: 30

============= Robots =============
0  :
 x = 30, y = 30, health = 100, energy = 90
1  :
 x = 0, y = 0, health = 100, energy = 100
2  :
 x = 0, y = 0, health = 100, energy = 100, missile = 5
==========================
Enter which robot to order, 'c' to create new robot, 'q' to quit
1
Possible actions: move, heal.

Enter 'move' for move action, 'heal' for heal action:
move
Enter new x-coordinate: -30
Enter new y-coordinate: -30

============= Robots =============
0  :
 x = 30, y = 30, health = 100, energy = 90
1  :
 x = -30, y = -30, health = 100, energy = 90
2  :
 x = 0, y = 0, health = 100, energy = 100, missile = 5
==========================
Enter which robot to order, 'c' to create new robot, 'q' to quit
2
Possible actions: move, strike.

Enter 'move' for move action, 'strike' for strike action:
move
```

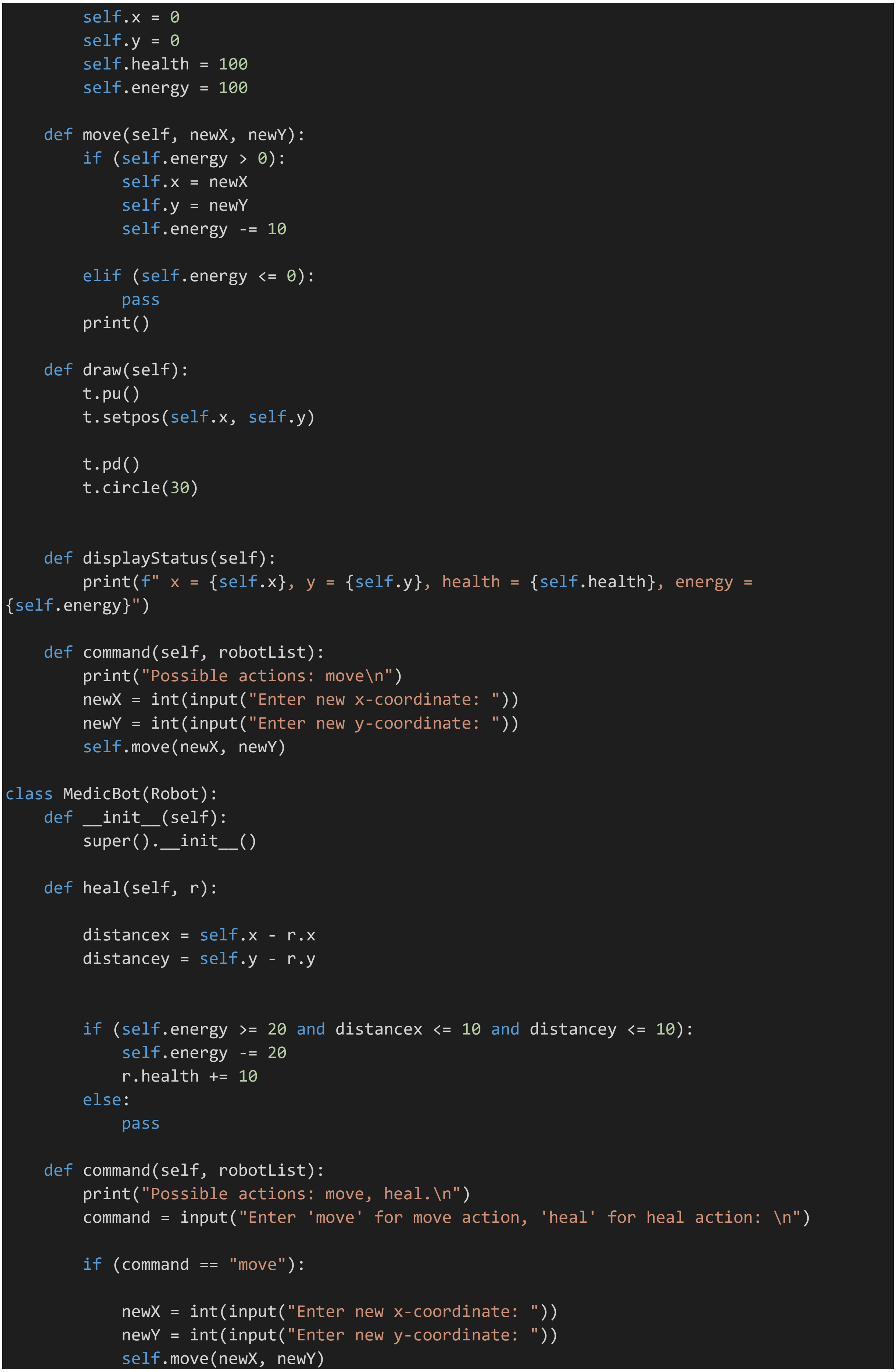


```
Possible actions: move, heal.

Enter 'move' for move action, 'heal' for heal action:
move
Enter new x-coordinate: -30
Enter new y-coordinate: -30

============= Robots =============
0  :
 x = 30, y = 30, health = 100, energy = 90
1  :
 x = -30, y = -30, health = 100, energy = 90
2  :
 x = 0, y = 0, health = 100, energy = 100, missile = 5
==========================
Enter which robot to order, 'c' to create new robot, 'q' to quit
2
Possible actions: move, strike.

Enter 'move' for move action, 'strike' for strike action:
move
Enter new x-coordinate: 40
Enter new y-coordinate: -40

============= Robots =============
0  :
 x = 30, y = 30, health = 100, energy = 90
1  :
 x = -30, y = -30, health = 100, energy = 90
2  :
 x = 40, y = -40, health = 100, energy = 90, missile = 5
==========================
Enter which robot to order, 'c' to create new robot, 'q' to quit
```

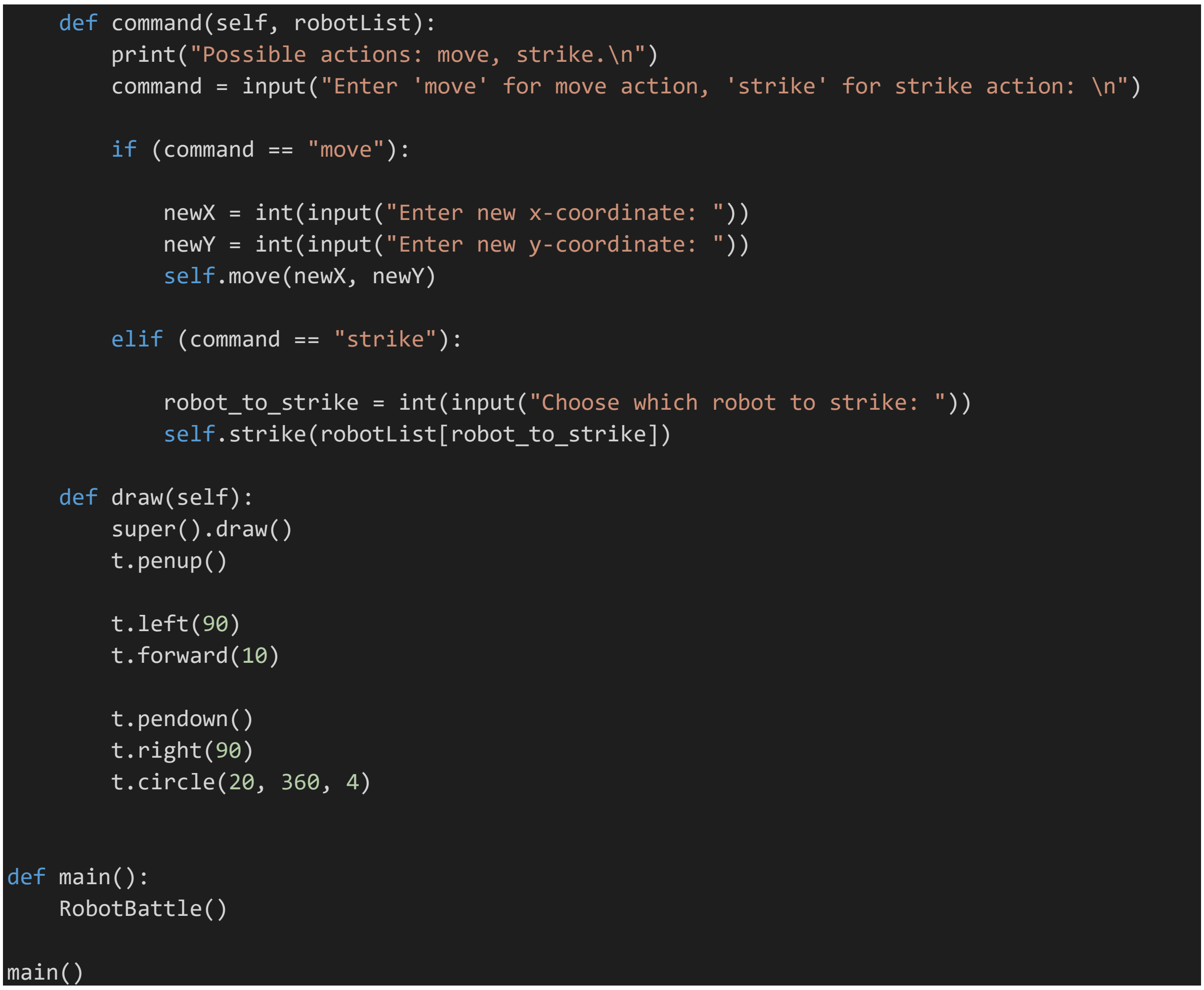
Code:



```
import turtle as t
t.speed(0)

def RobotBattle():
    #robotList stores the list of robots in the battle

    robotList = []
    while True:
        # Clear the screen and draw the robots
        t.clear()
        for robot in robotList:
            robot.draw()

        # Display the status of each robot
        print("============= Robots =============")
        i = 0
        for robot in robotList:
            print(i, " : ")
            robot.displayStatus()
            i += 1
        print("==========================")

        # Ask user which robot to command or to create a new robot
        choice = input("Enter which robot to order, 'c' to create new robot, 'q' to quit
\n")

        if choice == "q":
            break

        elif choice == "c":
            print("Enter which type of robots to create\n")
            robotType = input("'r' for Robot, 'm' for MedicBot, 's' for StrikerBot\n")
            if robotType == "r":
                newRobot = Robot()

            elif robotType == "m":
                newRobot = MedicBot()

            elif robotType == "s":
                newRobot = StrikerBot()

            robotList = robotList + [newRobot]

        else:
            n = int(choice)
            robotList[n].command(robotList)

        i = 0
        for robot in robotList:
            if (robot.health <= 0):
                del robotList[i]
            i += 1

class Robot(object):
    def __init__(self):
```



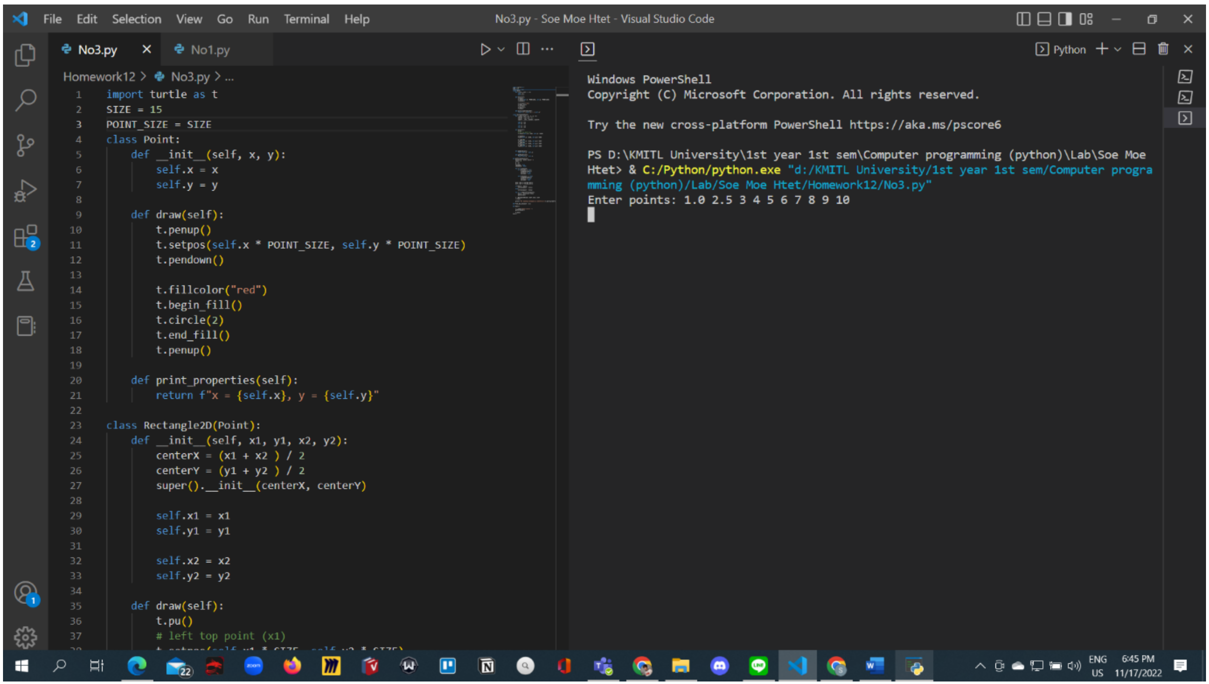
```
        self.x = 0
        self.y = 0
        self.health = 100
        self.energy = 100

    def move(self, newX, newY):
        if (self.energy > 0):
            self.x = newX
            self.y = newY
            self.energy -= 10

        elif (self.energy <= 0):
            pass
        print()

    def draw(self):
        t.pu()
        t.setpos(self.x, self.y)

        t.pd()
        t.circle(30)


    def displayStatus(self):
        print(f" x = {self.x}, y = {self.y}, health = {self.health}, energy =
{self.energy}")

    def command(self, robotList):
        print("Possible actions: move\n")
        newX = int(input("Enter new x-coordinate: "))
        newY = int(input("Enter new y-coordinate: "))
        self.move(newX, newY)

class MedicBot(Robot):
    def __init__(self):
        super().__init__()

    def heal(self, r):

        distancex = self.x - r.x
        distancey = self.y - r.y


        if (self.energy >= 20 and distancex <= 10 and distancey <= 10):
            self.energy -= 20
            r.health += 10
        else:
            pass

    def command(self, robotList):
        print("Possible actions: move, heal.\n")
        command = input("Enter 'move' for move action, 'heal' for heal action: \n")

        if (command == "move"):

            newX = int(input("Enter new x-coordinate: "))
            newY = int(input("Enter new y-coordinate: "))
            self.move(newX, newY)
        elif (command == "heal"):

            robot_to_heal = int(input("Choose which robot to heal: "))
            self.heal(robotList[robot_to_heal])

    def draw(self):
        super().draw()

        t.penup()
        t.forward(-5)

        t.left(90)
        t.forward(15)

        t.pendown()

        t.right(90)
        t.forward(10)

        for _ in range(3):
            t.left(90)
            t.forward(10)

            t.right(90)
            t.forward(10)

            t.left(90)
            t.forward(10)

        t.left(90)
        t.forward(10)

        t.right(90)
        t.forward(10)



class StrikerBot(Robot):
    def __init__(self):
        super().__init__()
        self.missile = 5

    def strike(self, r):
        distancex = self.x - r.x
        distancey = self.y - r.y
        if (self.energy >= 20 and self.missile > 0 and distancex <= 10 and distancey <=
10):
            self.energy -= 20
            self.missile -= 1
            r.health -= 50
        else:
            pass

    def displayStatus(self):
        print(f" x = {self.x}, y = {self.y}, health = {self.health}, energy =
{self.energy}, missile = {self.missile}")
```



```
    def command(self, robotList):
        print("Possible actions: move, strike.\n")
        command = input("Enter 'move' for move action, 'strike' for strike action: \n")

        if (command == "move"):

            newX = int(input("Enter new x-coordinate: "))
            newY = int(input("Enter new y-coordinate: "))
            self.move(newX, newY)

        elif (command == "strike"):

            robot_to_strike = int(input("Choose which robot to strike: "))
            self.strike(robotList[robot_to_strike])

    def draw(self):
        super().draw()
        t.penup()

        t.left(90)
        t.forward(10)

        t.pendown()
        t.right(90)
        t.circle(20, 360, 4)


def main():
    RobotBattle()

main()
```

No.3

Result:


File Edit Selection View Go Run Terminal Help
No3.py - Soe Moe Htet - Visual Studio Code
No3.py
No1.py
Homework12 > No3.py > ...
Python
ENG US 6:45 PM 11/17/2022

```python
import turtle as t
SIZE = 15
POINT_SIZE = SIZE
class Point:
    def __init__(self, x, y):
        self.x = x
        self.y = y

    def draw(self):
        t.penup()
        t.setpos(self.x * POINT_SIZE, self.y * POINT_SIZE)
        t.pendown()

        t.fillcolor("red")
        t.begin_fill()
        t.circle(2)
        t.end_fill()
        t.penup()

    def print_properties(self):
        return f"x = {self.x}, y = {self.y}"

class Rectangle2D(Point):
    def __init__(self, x1, y1, x2, y2):
        centerX = (x1 + x2 ) / 2
        centerY = (y1 + y2 ) / 2
        super().__init__(centerX, centerY)

        self.x1 = x1
        self.y1 = y1

        self.x2 = x2
        self.y2 = y2

    def draw(self):
        t.pu()
        # left top point (x1)
```

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS D:\KMITL University\1st year 1st sem\Computer programming (python)\Lab\Soe Moe
Htet> & C:/Python/python.exe "d:/KMITL University/1st year 1st sem/Computer progra
mming (python)/Lab/Soe Moe Htet/Homework12/No3.py"
Enter points: 1.0 2.5 3 4 5 6 7 8 9 10
```
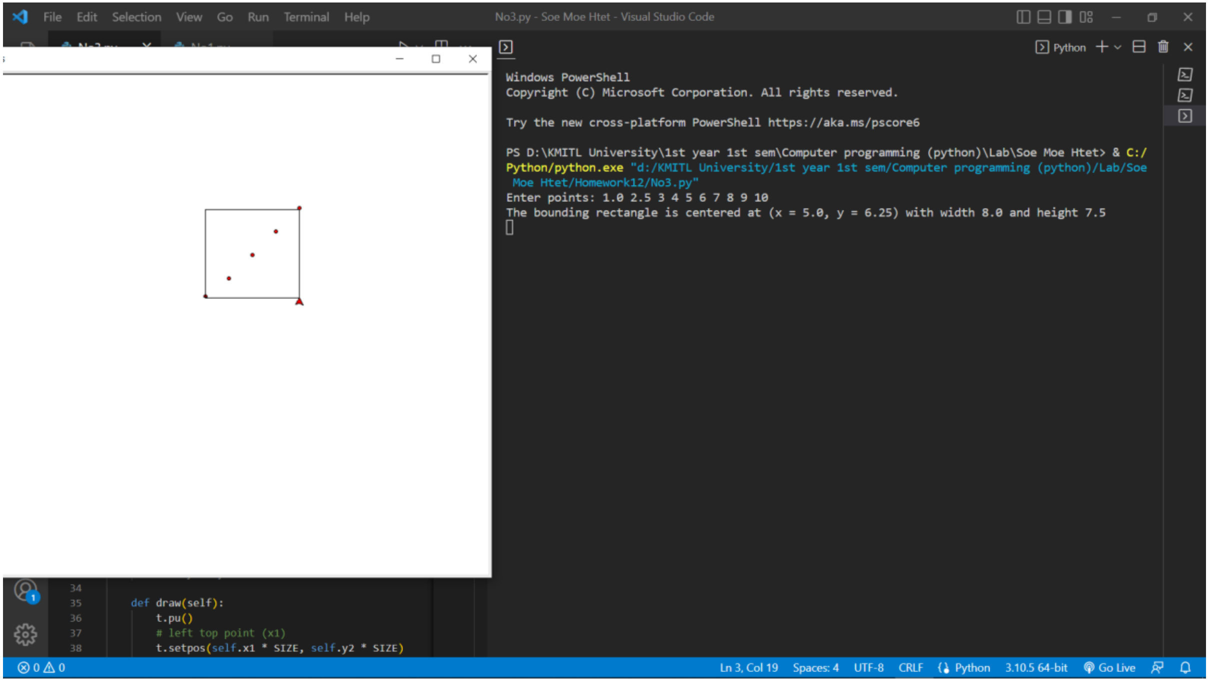
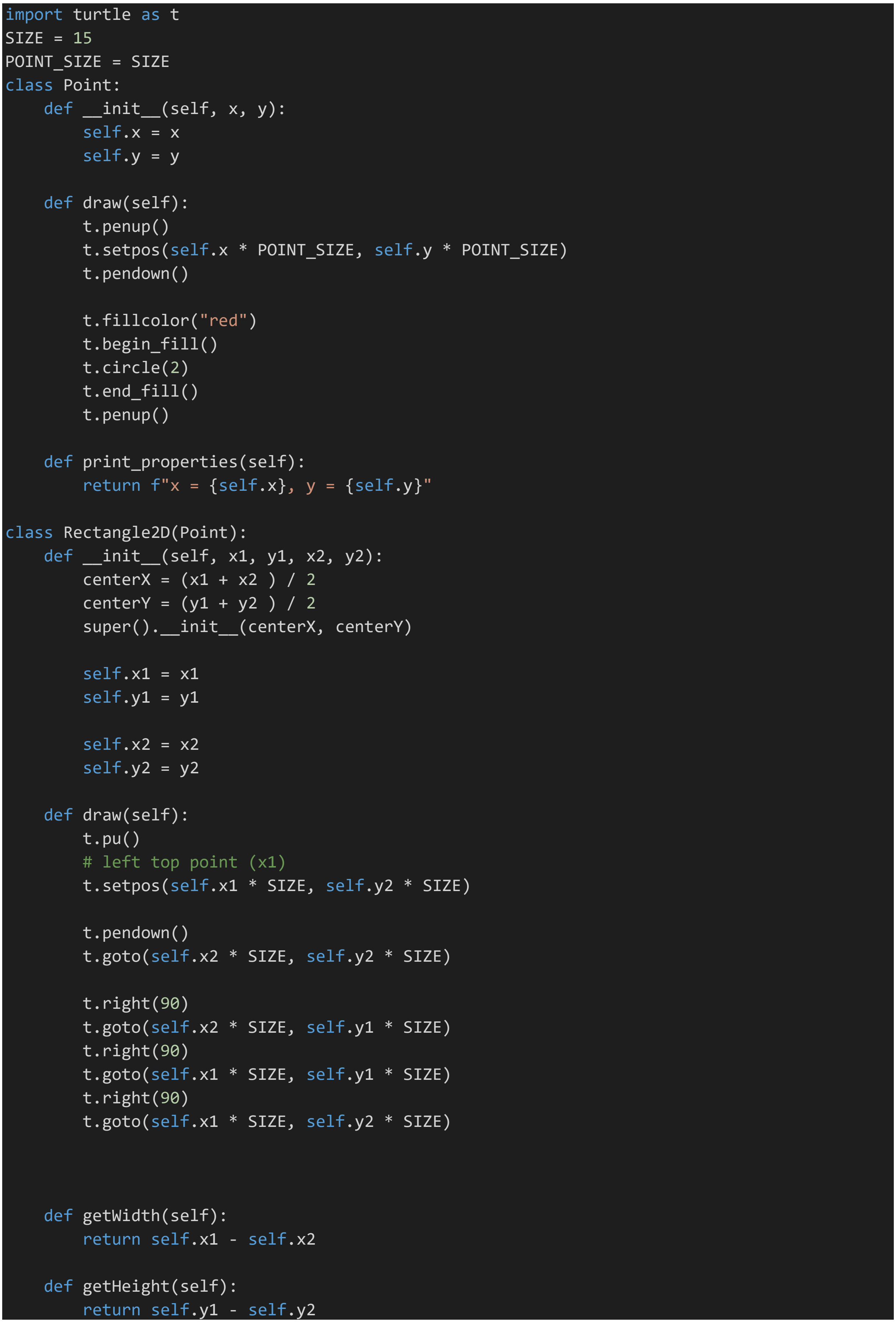


File Edit Selection View Go Run Terminal Help
No3.py - Soe Moe Htet - Visual Studio Code
Python
Ln 3, Col 19 Spaces: 4 UTF-8 CRLF Python 3.10.5 64-bit Go Live

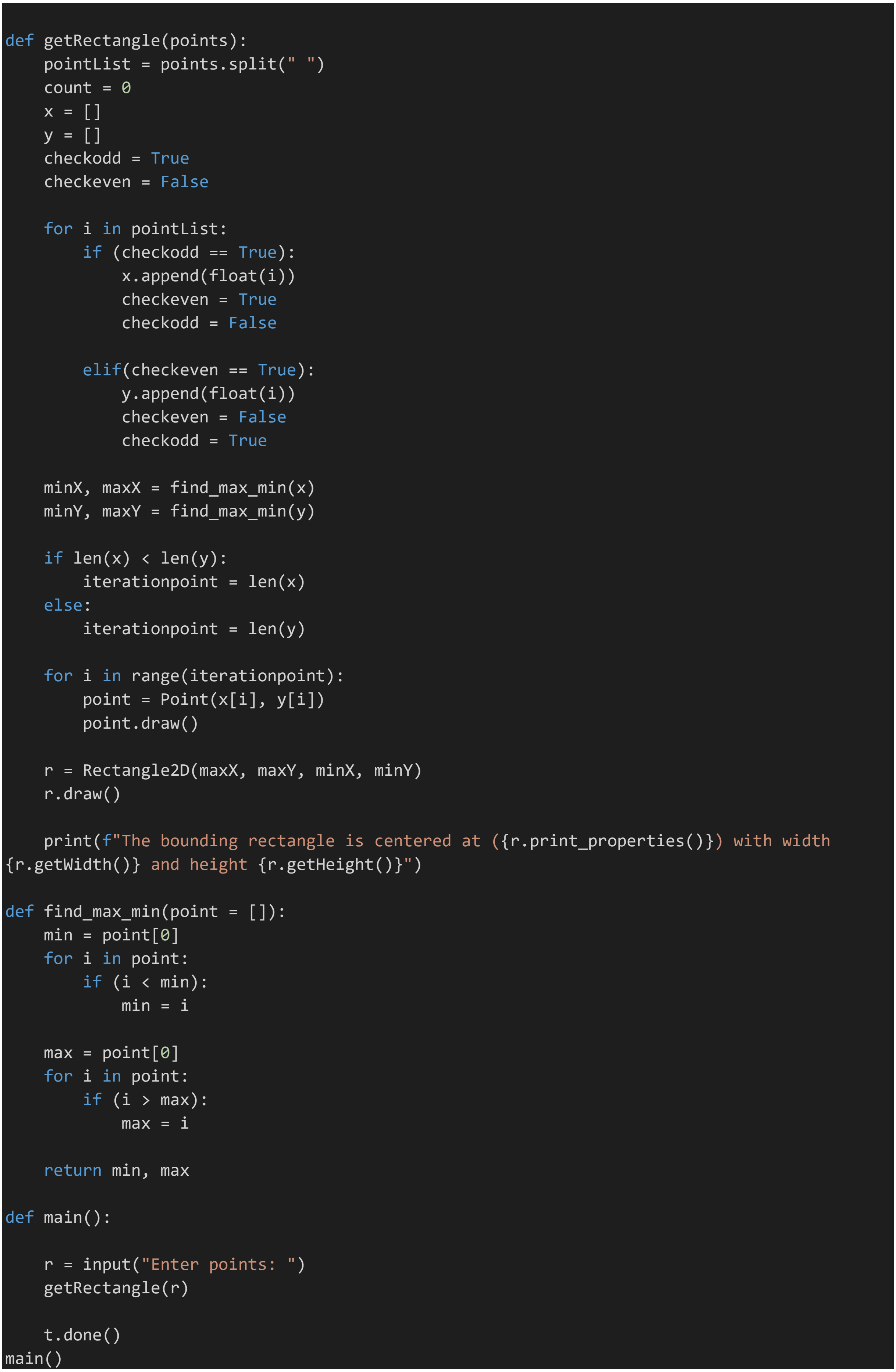
```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS D:\KMITL University\1st year 1st sem\Computer programming (python)\Lab\Soe Moe Htet> & C:/
Python/python.exe "d:/KMITL University/1st year 1st sem/Computer programming (python)/Lab/Soe
 Moe Htet/Homework12/No3.py"
Enter points: 1.0 2.5 3 4 5 6 7 8 9 10
The bounding rectangle is centered at (x = 5.0, y = 6.25) with width 8.0 and height 7.5
```

```python
    def draw(self):
        t.pu()
        # left top point (x1)
        t.setpos(self.x1 * SIZE, self.y2 * SIZE)
```

Code:



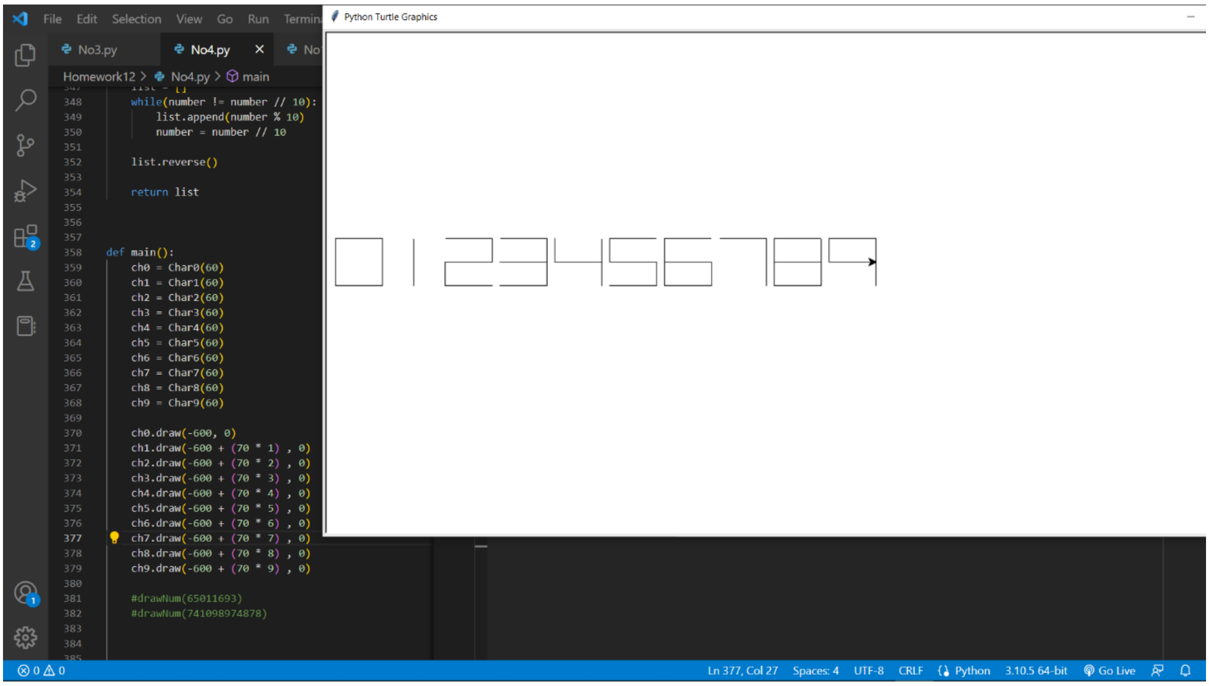
```python
import turtle as t
SIZE = 15
POINT_SIZE = SIZE
class Point:
    def __init__(self, x, y):
        self.x = x
        self.y = y

    def draw(self):
        t.penup()
        t.setpos(self.x * POINT_SIZE, self.y * POINT_SIZE)
        t.pendown()

        t.fillcolor("red")
        t.begin_fill()
        t.circle(2)
        t.end_fill()
        t.penup()

    def print_properties(self):
        return f"x = {self.x}, y = {self.y}"

class Rectangle2D(Point):
    def __init__(self, x1, y1, x2, y2):
        centerX = (x1 + x2 ) / 2
        centerY = (y1 + y2 ) / 2
        super().__init__(centerX, centerY)

        self.x1 = x1
        self.y1 = y1

        self.x2 = x2
        self.y2 = y2

    def draw(self):
        t.pu()
        # left top point (x1)
        t.setpos(self.x1 * SIZE, self.y2 * SIZE)

        t.pendown()
        t.goto(self.x2 * SIZE, self.y2 * SIZE)

        t.right(90)
        t.goto(self.x2 * SIZE, self.y1 * SIZE)
        t.right(90)
        t.goto(self.x1 * SIZE, self.y1 * SIZE)
        t.right(90)
        t.goto(self.x1 * SIZE, self.y2 * SIZE)



    def getWidth(self):
        return self.x1 - self.x2

    def getHeight(self):
        return self.y1 - self.y2
```



```python
def getRectangle(points):
    pointList = points.split(" ")
    count = 0
    x = []
    y = []
    checkodd = True
    checkeven = False

    for i in pointList:
        if (checkodd == True):
            x.append(float(i))
            checkeven = True
            checkodd = False

        elif(checkeven == True):
            y.append(float(i))
            checkeven = False
            checkodd = True

    minX, maxX = find_max_min(x)
    minY, maxY = find_max_min(y)

    if len(x) < len(y):
        iterationpoint = len(x)
    else:
        iterationpoint = len(y)

    for i in range(iterationpoint):
        point = Point(x[i], y[i])
        point.draw()

    r = Rectangle2D(maxX, maxY, minX, minY)
    r.draw()

    print(f"The bounding rectangle is centered at ({r.print_properties()}) with width {r.getWidth()} and height {r.getHeight()}")

def find_max_min(point = []):
    min = point[0]
    for i in point:
        if (i < min):
            min = i

    max = point[0]
    for i in point:
        if (i > max):
            max = i

    return min, max

def main():

    r = input("Enter points: ")
    getRectangle(r)

    t.done()
main()
```

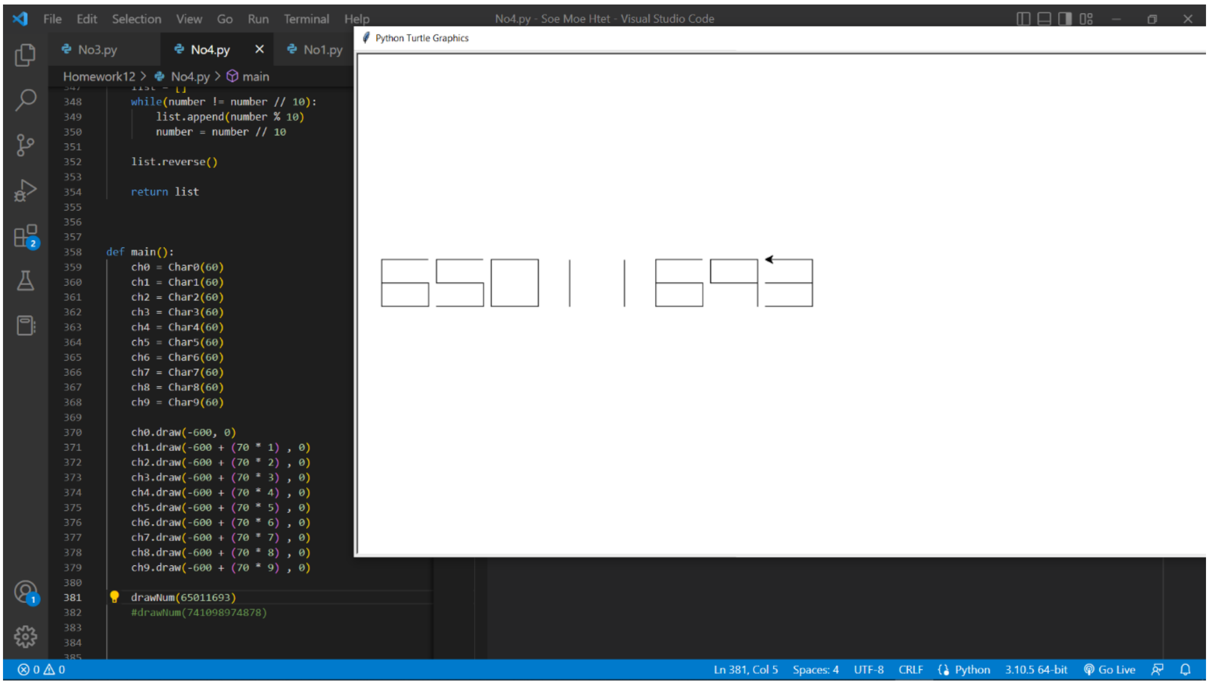
No.4 (1.1 + 1.2)

Result:

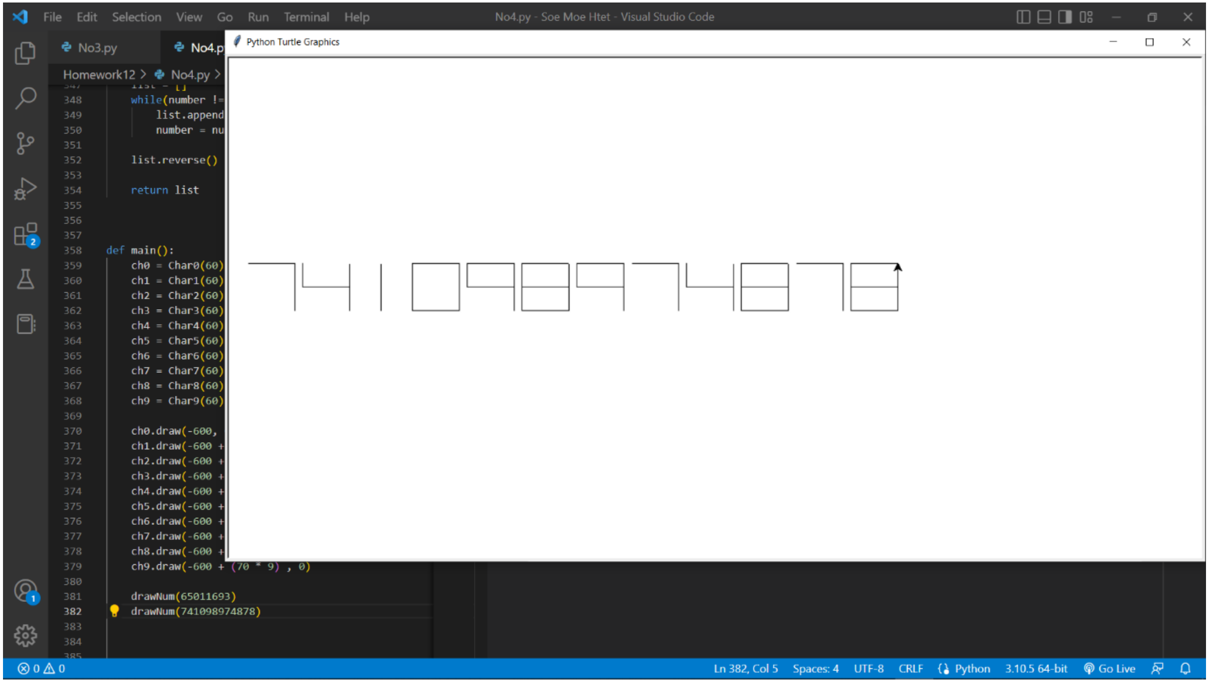


```python
    list = []
    while(number != number // 10):
        list.append(number % 10)
        number = number // 10

    list.reverse()

    return list


def main():
    ch0 = Char0(60)
    ch1 = Char1(60)
    ch2 = Char2(60)
    ch3 = Char3(60)
    ch4 = Char4(60)
    ch5 = Char5(60)
    ch6 = Char6(60)
    ch7 = Char7(60)
    ch8 = Char8(60)
    ch9 = Char9(60)

    ch0.draw(-600, 0)
    ch1.draw(-600 + (70 * 1) , 0)
    ch2.draw(-600 + (70 * 2) , 0)
    ch3.draw(-600 + (70 * 3) , 0)
    ch4.draw(-600 + (70 * 4) , 0)
    ch5.draw(-600 + (70 * 5) , 0)
    ch6.draw(-600 + (70 * 6) , 0)
    ch7.draw(-600 + (70 * 7) , 0)
    ch8.draw(-600 + (70 * 8) , 0)
    ch9.draw(-600 + (70 * 9) , 0)

    #drawNum(65011693)
    #drawNum(741098974878)
```

⊗ 0 ⚠ 0

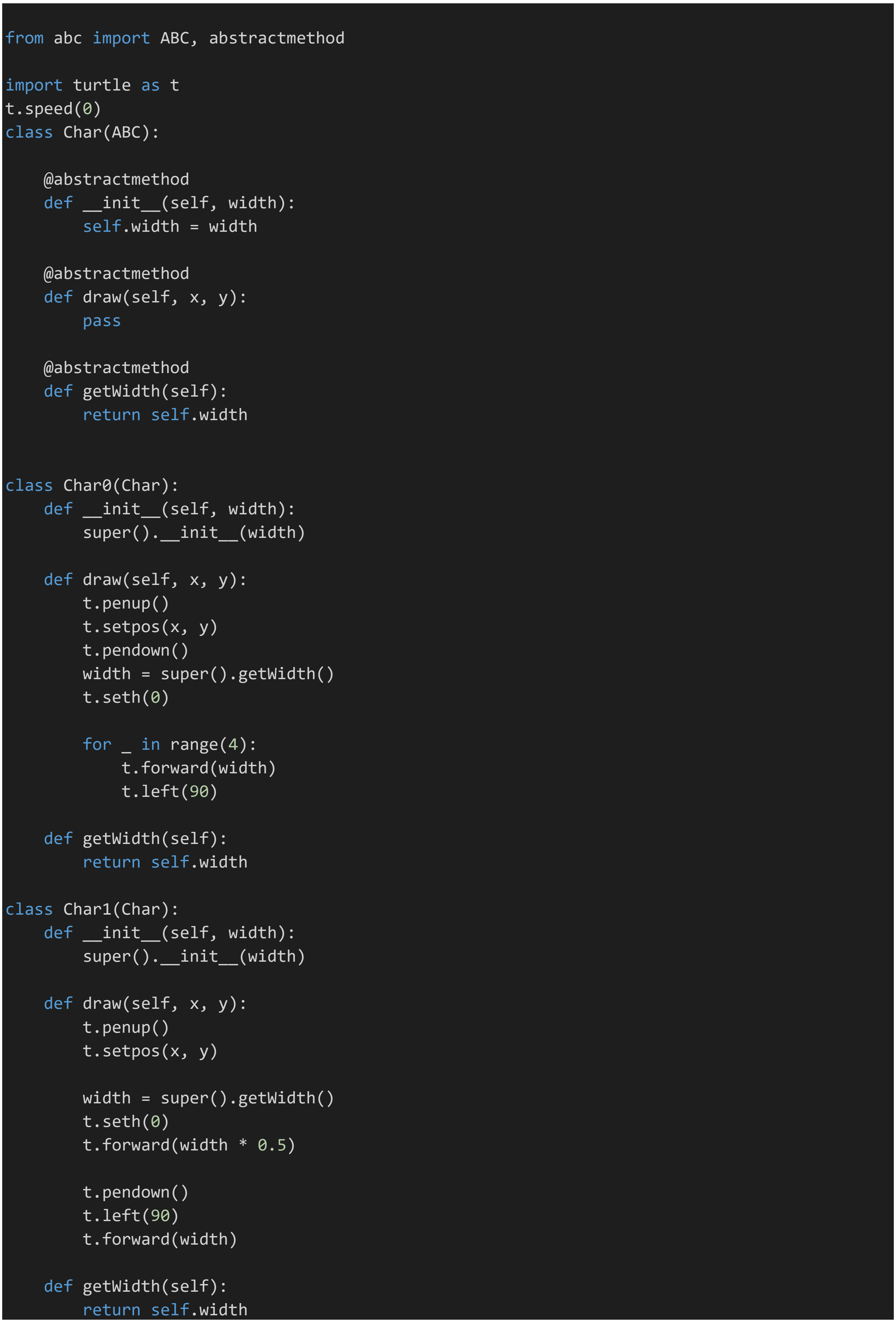


```
    list = []
    while(number != number // 10):
        list.append(number % 10)
        number = number // 10

    list.reverse()

    return list


def main():
    ch0 = Char0(60)
    ch1 = Char1(60)
    ch2 = Char2(60)
    ch3 = Char3(60)
    ch4 = Char4(60)
    ch5 = Char5(60)
    ch6 = Char6(60)
    ch7 = Char7(60)
    ch8 = Char8(60)
    ch9 = Char9(60)

    ch0.draw(-600, 0)
    ch1.draw(-600 + (70 * 1) , 0)
    ch2.draw(-600 + (70 * 2) , 0)
    ch3.draw(-600 + (70 * 3) , 0)
    ch4.draw(-600 + (70 * 4) , 0)
    ch5.draw(-600 + (70 * 5) , 0)
    ch6.draw(-600 + (70 * 6) , 0)
    ch7.draw(-600 + (70 * 7) , 0)
    ch8.draw(-600 + (70 * 8) , 0)
    ch9.draw(-600 + (70 * 9) , 0)

    drawNum(65011693)
    #drawNum(741098974878)
```



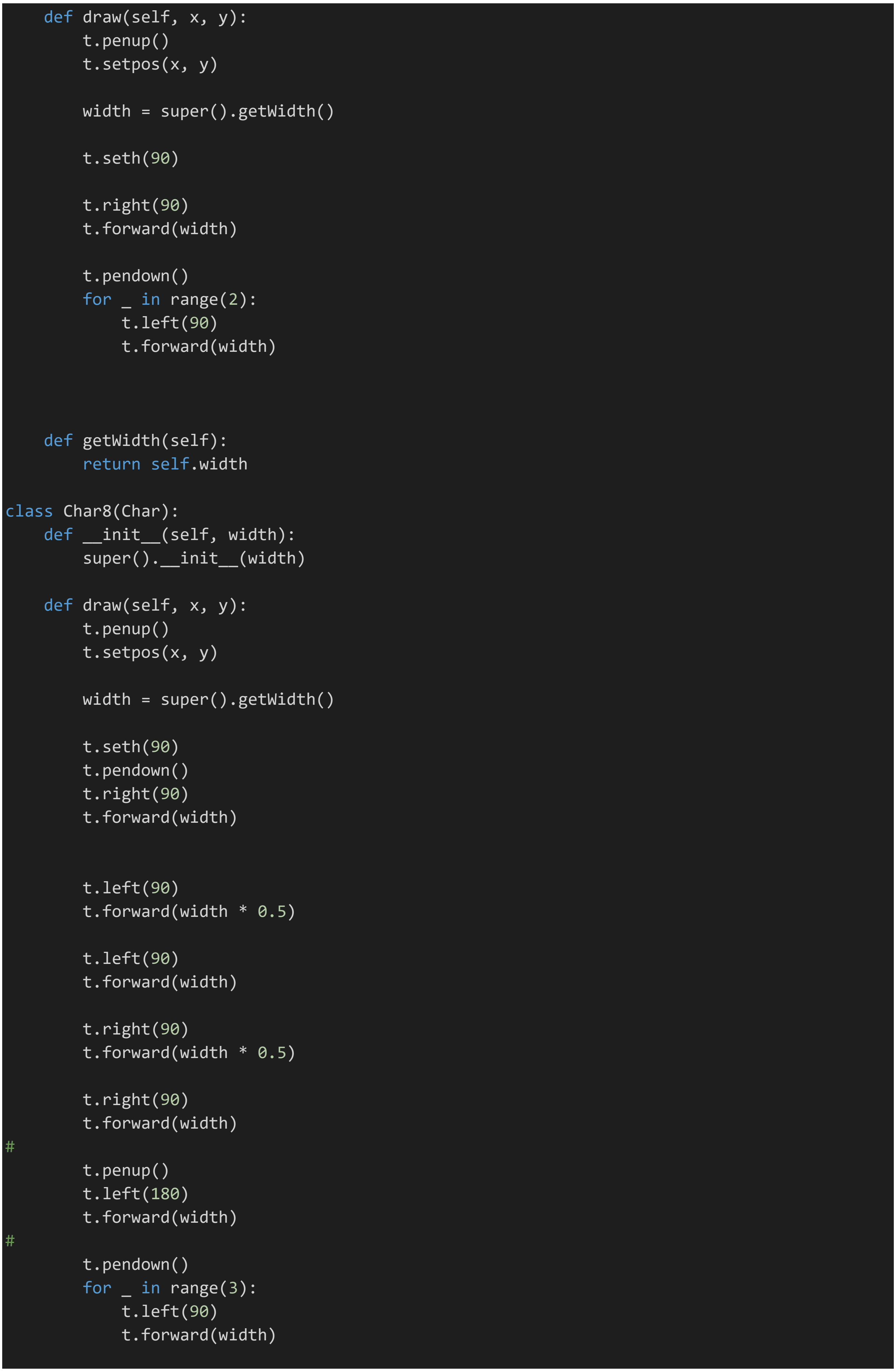
```
    list = []
    while(number !=
        list.append
        number = nu

    list.reverse()

    return list


def main():
    ch0 = Char0(60)
    ch1 = Char1(60)
    ch2 = Char2(60)
    ch3 = Char3(60)
    ch4 = Char4(60)
    ch5 = Char5(60)
    ch6 = Char6(60)
    ch7 = Char7(60)
    ch8 = Char8(60)
    ch9 = Char9(60)

    ch0.draw(-600,
    ch1.draw(-600 +
    ch2.draw(-600 +
    ch3.draw(-600 +
    ch4.draw(-600 +
    ch5.draw(-600 +
    ch6.draw(-600 +
    ch7.draw(-600 +
    ch8.draw(-600 +
    ch9.draw(-600 + (70 * 9) , 0)

    drawNum(65011693)
    drawNum(741098974878)
```

Code:

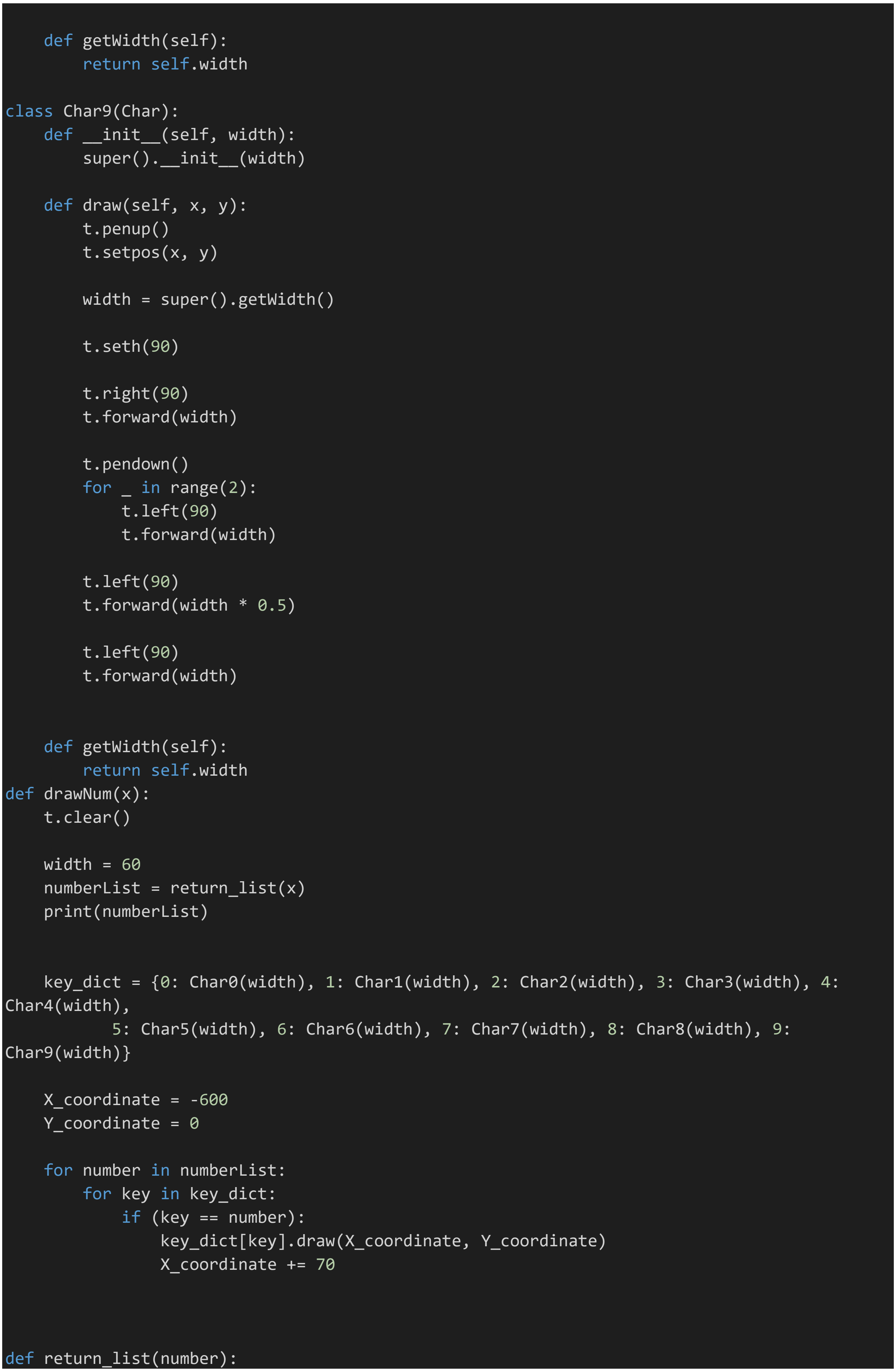


```
from abc import ABC, abstractmethod

import turtle as t
t.speed(0)
class Char(ABC):

    @abstractmethod
    def __init__(self, width):
        self.width = width

    @abstractmethod
    def draw(self, x, y):
        pass

    @abstractmethod
    def getWidth(self):
        return self.width


class Char0(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)
        t.pendown()
        width = super().getWidth()
        t.seth(0)

        for _ in range(4):
            t.forward(width)
            t.left(90)

    def getWidth(self):
        return self.width

class Char1(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)

        width = super().getWidth()
        t.seth(0)
        t.forward(width * 0.5)

        t.pendown()
        t.left(90)
        t.forward(width)

    def getWidth(self):
        return self.width
```

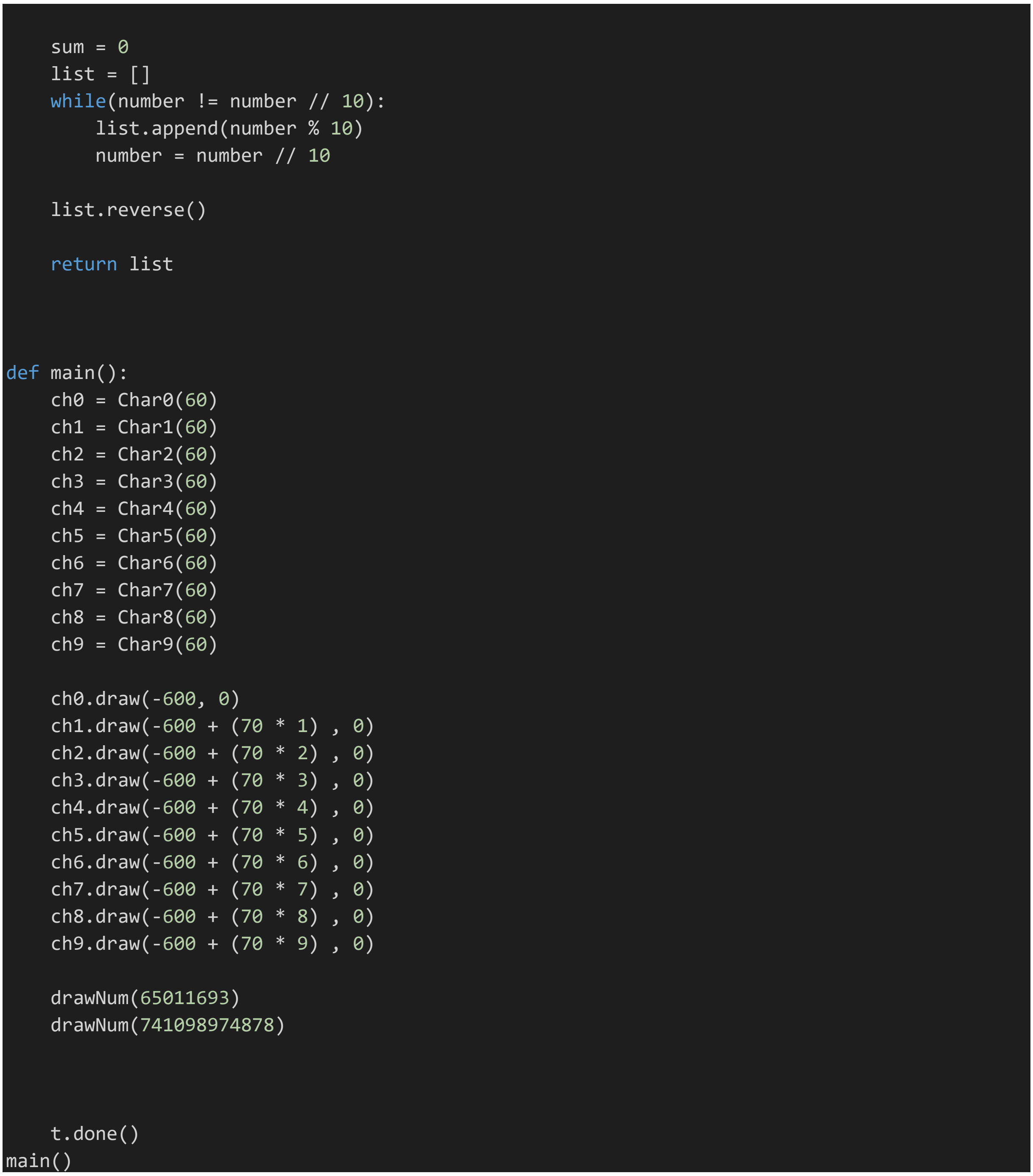
```
class Char2(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)
        t.pendown()
        width = super().getWidth()

        t.right(90)
        t.forward(width)

        t.left(180)
        t.forward(width)

        t.right(90)
        t.forward(width * 0.5)

        t.right(90)
        t.forward(width)

        t.left(90)
        t.forward(width * 0.5)

        t.left(90)
        t.forward(width)


    def getWidth(self):
        return self.width

class Char3(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)
        t.pendown()
        width = super().getWidth()

        t.seth(90)
        t.right(90)
        t.forward(width)

        t.left(90)
        t.forward(width * 0.5)

        t.left(90)
        t.forward(width)

        t.right(180)
        t.forward(width)

        t.left(90)
        t.forward(width * 0.5)
        t.left(90)
        t.forward(width)

    def getWidth(self):
        return self.width

class Char4(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)

        width = super().getWidth()

        t.seth(90)
        t.penup()
        t.right(90)
        t.forward(width)

        t.pendown()
        t.left(90)
        t.forward(width)

        t.penup()
        t.left(90)
        t.forward(width)

        t.pendown()

        t.left(90)
        t.forward(width * 0.5)

        t.left(90)
        t.forward(width)


    def getWidth(self):
        return self.width

class Char5(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)

        width = super().getWidth()

        t.seth(90)
        t.pendown()
        t.right(90)
        t.forward(width)
        t.left(90)
        t.forward(width * 0.5)

        t.left(90)
        t.forward(width)

        t.right(90)
        t.forward(width * 0.5)

        t.right(90)
        t.forward(width)

    def getWidth(self):
        return self.width

class Char6(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)

        width = super().getWidth()

        t.seth(90)
        t.pendown()
        t.right(90)
        t.forward(width)


        t.left(90)
        t.forward(width * 0.5)

        t.left(90)
        t.forward(width)

        t.right(90)
        t.forward(width * 0.5)

        t.right(90)
        t.forward(width)
#
        t.penup()
        t.left(180)
        t.forward(width)
#
        t.pendown()
        t.left(90)
        t.forward(width)

    def getWidth(self):
        return self.width

class Char7(Char):
    def __init__(self, width):
        super().__init__(width)
```



```
    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)

        width = super().getWidth()

        t.seth(90)

        t.right(90)
        t.forward(width)

        t.pendown()
        for _ in range(2):
            t.left(90)
            t.forward(width)



    def getWidth(self):
        return self.width

class Char8(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)

        width = super().getWidth()

        t.seth(90)
        t.pendown()
        t.right(90)
        t.forward(width)


        t.left(90)
        t.forward(width * 0.5)

        t.left(90)
        t.forward(width)

        t.right(90)
        t.forward(width * 0.5)

        t.right(90)
        t.forward(width)
#
        t.penup()
        t.left(180)
        t.forward(width)
#
        t.pendown()
        for _ in range(3):
            t.left(90)
            t.forward(width)
```



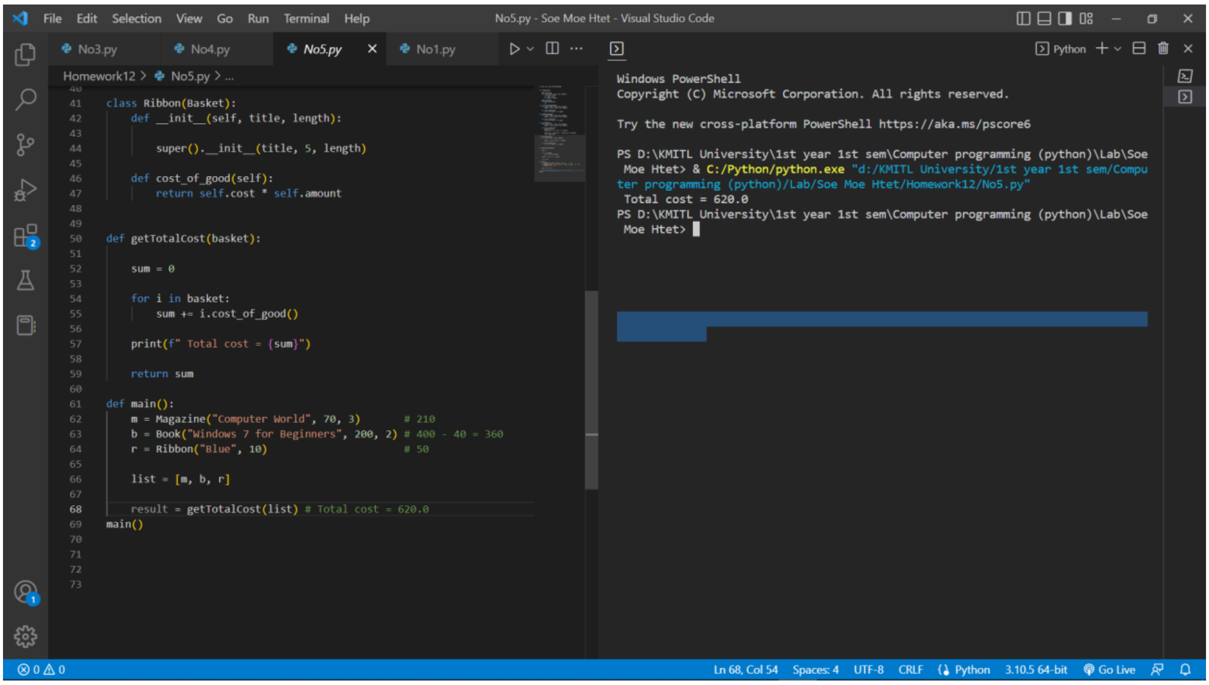
```
    def getWidth(self):
        return self.width

class Char9(Char):
    def __init__(self, width):
        super().__init__(width)

    def draw(self, x, y):
        t.penup()
        t.setpos(x, y)

        width = super().getWidth()

        t.seth(90)

        t.right(90)
        t.forward(width)

        t.pendown()
        for _ in range(2):
            t.left(90)
            t.forward(width)

        t.left(90)
        t.forward(width * 0.5)

        t.left(90)
        t.forward(width)


    def getWidth(self):
        return self.width
def drawNum(x):
    t.clear()

    width = 60
    numberList = return_list(x)
    print(numberList)


    key_dict = {0: Char0(width), 1: Char1(width), 2: Char2(width), 3: Char3(width), 4:
Char4(width),
           5: Char5(width), 6: Char6(width), 7: Char7(width), 8: Char8(width), 9:
Char9(width)}

    X_coordinate = -600
    Y_coordinate = 0

    for number in numberList:
        for key in key_dict:
            if (key == number):
                key_dict[key].draw(X_coordinate, Y_coordinate)
                X_coordinate += 70



def return_list(number):
```



```
    sum = 0
    list = []
    while(number != number // 10):
        list.append(number % 10)
        number = number // 10

    list.reverse()

    return list



def main():
    ch0 = Char0(60)
    ch1 = Char1(60)
    ch2 = Char2(60)
    ch3 = Char3(60)
    ch4 = Char4(60)
    ch5 = Char5(60)
    ch6 = Char6(60)
    ch7 = Char7(60)
    ch8 = Char8(60)
    ch9 = Char9(60)

    ch0.draw(-600, 0)
    ch1.draw(-600 + (70 * 1) , 0)
    ch2.draw(-600 + (70 * 2) , 0)
    ch3.draw(-600 + (70 * 3) , 0)
    ch4.draw(-600 + (70 * 4) , 0)
    ch5.draw(-600 + (70 * 5) , 0)
    ch6.draw(-600 + (70 * 6) , 0)
    ch7.draw(-600 + (70 * 7) , 0)
    ch8.draw(-600 + (70 * 8) , 0)
    ch9.draw(-600 + (70 * 9) , 0)

    drawNum(65011693)
    drawNum(741098974878)



    t.done()
main()
```

No.5 (2.)

Result:

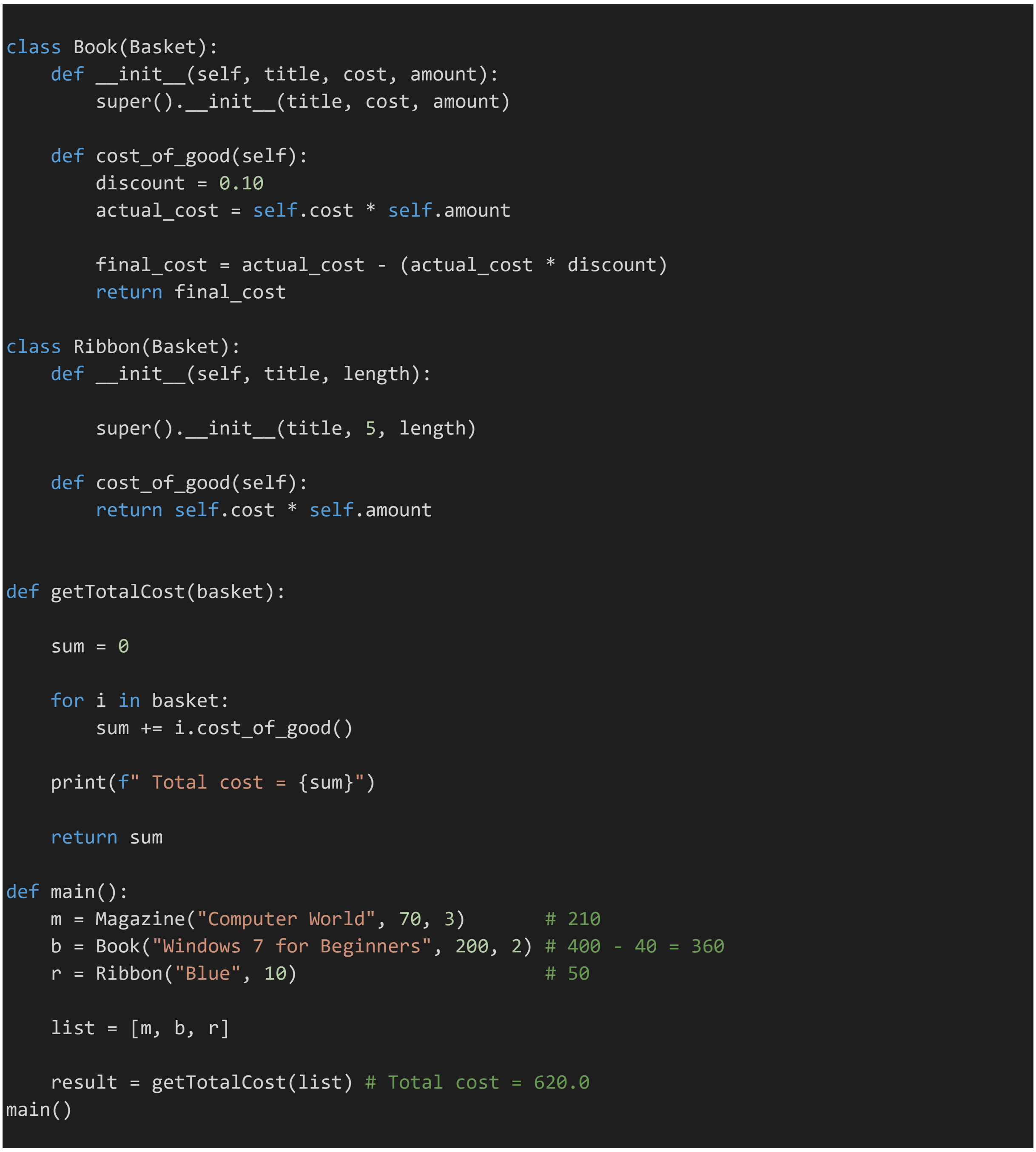


```python
class Ribbon(Basket):
    def __init__(self, title, length):

        super().__init__(title, 5, length)

    def cost_of_good(self):
        return self.cost * self.amount


def getTotalCost(basket):

    sum = 0

    for i in basket:
        sum += i.cost_of_good()

    print(f" Total cost = {sum}")

    return sum

def main():
    m = Magazine("Computer World", 70, 3)        # 210
    b = Book("Windows 7 for Beginners", 200, 2) # 400 - 40 = 360
    r = Ribbon("Blue", 10)                       # 50

    list = [m, b, r]

    result = getTotalCost(list) # Total cost = 620.0
main()
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS D:\KMITL University\1st year 1st sem\Computer programming (python)\Lab\Soe
 Moe Htet> & C:/Python/python.exe "d:/KMITL University/1st year 1st sem/Compu
ter programming (python)/Lab/Soe Moe Htet/Homework12/No5.py"
 Total cost = 620.0
PS D:\KMITL University\1st year 1st sem\Computer programming (python)\Lab\Soe
 Moe Htet>
```

Code:

```python
from abc import ABC, abstractmethod


class Basket(ABC):

    @abstractmethod
    def __init__(self, title, cost, amount):
        self.title = title
        self.cost = cost
        self.amount = amount

    @abstractmethod
    def cost_of_good(self):
        pass

class StationaryGood(Basket):
    def __init__(self, title, cost, amount):
        super().__init__(title, cost, amount)

    def cost_of_good(self):
        return self.cost * self.amount

class Magazine(Basket):
    def __init__(self, title, cost, amount):
        super().__init__(title, cost, amount)

    def cost_of_good(self):
        return self.cost * self.amount
```



```python
class Book(Basket):
    def __init__(self, title, cost, amount):
        super().__init__(title, cost, amount)

    def cost_of_good(self):
        discount = 0.10
        actual_cost = self.cost * self.amount

        final_cost = actual_cost - (actual_cost * discount)
        return final_cost

class Ribbon(Basket):
    def __init__(self, title, length):

        super().__init__(title, 5, length)

    def cost_of_good(self):
        return self.cost * self.amount


def getTotalCost(basket):

    sum = 0

    for i in basket:
        sum += i.cost_of_good()

    print(f" Total cost = {sum}")

    return sum

def main():
    m = Magazine("Computer World", 70, 3)       # 210
    b = Book("Windows 7 for Beginners", 200, 2) # 400 - 40 = 360
    r = Ribbon("Blue", 10)                      # 50

    list = [m, b, r]

    result = getTotalCost(list) # Total cost = 620.0
main()
```