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| ***Student Name:*** | Christian Dunham |
| ***Course Number:*** | CIS 168 |
| ***Assignment #:*** | Final Project |
| ***Project Name:*** | Pong |
| ***Project Purpose:*** | This activity is to help you organize your thoughts **prior to writing code**. |
| ***Description:*** | * Utilize Object Oriented Programming to create the Pong Game in Python Language |

**Strategic View of Program : Class Diagram**

**Main**

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| --- | --- |
| Member | Action - Pseudocode |
|  | ###########################################################################################  ################ Main Function for 2 Player Game ############################  ###########################################################################################  #main function - this is for 2 player game  def Main(graphWindow):    #variables for the game  WindowX = 400  WindowY = 200  xSpeed = .045  ySpeed = .045  PaddleXSize = 5  PaddleYSize = 40  ballSize = 5  #variables for score  P1\_Counter = 0  P1\_one = Text(Point(5,8),"1")  P1\_one.setTextColor("white")  P1\_two = Text(Point(5,8),"2")  P1\_two.setTextColor("white")  P1\_three = Text(Point(5,8),"3")  P1\_three.setTextColor("white")  P1\_four = Text(Point(5,8),"4")  P1\_four.setTextColor("white")  P1\_five = Text(Point(5,8),"5")  P1\_five.setTextColor("white")  P1\_six = Text(Point(5,8),"6")  P1\_six.setTextColor("white")  P1\_seven = Text(Point(5,8),"7")  P1\_seven.setTextColor("white")  P1\_eight = Text(Point(5,8),"8")  P1\_eight.setTextColor("white")  P1\_nine = Text(Point(5,8),"9")  P1\_nine.setTextColor("white")  P1\_ten = Text(Point(8,8),"10")  P1\_ten.setTextColor("white")  P1\_eleven = Text(Point(200,100),"WINNER")  P1\_eleven.setTextColor("white")  P2\_Counter = 0  P2\_one = Text(Point(390,8),"1")  P2\_one.setTextColor("white")  P2\_two = Text(Point(390,8),"2")  P2\_two.setTextColor("white")  P2\_three = Text(Point(390,8),"3")  P2\_three.setTextColor("white")  P2\_four = Text(Point(390,8),"4")  P2\_four.setTextColor("white")  P2\_five = Text(Point(390,8),"5")  P2\_five.setTextColor("white")  P2\_six = Text(Point(390,8),"6")  P2\_six.setTextColor("white")  P2\_seven = Text(Point(390,8),"7")  P2\_seven.setTextColor("white")  P2\_eight = Text(Point(390,8),"8")  P2\_eight.setTextColor("white")  P2\_nine = Text(Point(390,8),"9")  P2\_nine.setTextColor("white")  P2\_ten = Text(Point(390,8),"10")  P2\_ten.setTextColor("white")  P2\_eleven = Text(Point(200,100),"WINNER")  P2\_eleven.setTextColor("white")  #make a game window  gameWindow = graphWindow  #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #make a left paddle  lPaddle = Paddle( PaddleXSize, PaddleYSize, 'blue', 'black')  leftPaddle = makeLeftPaddle(lPaddle, WindowY)  leftPaddle.draw(gameWindow)  #make a right paddle  rPaddle = Paddle( PaddleXSize, PaddleYSize, 'red', 'black')  rightPaddle = makeRightPaddle(rPaddle, WindowX, WindowY)  rightPaddle.draw(gameWindow)  #While loop to animate the game  while True:  #check keys for up and down que from user  movePaddle = gameWindow.checkKey()    #if statement to move the user paddle up and down  if movePaddle == 'w':  leftPaddle.move(0,-10)  elif movePaddle == 's':  leftPaddle.move(0,10)  elif movePaddle == 'i':  rightPaddle.move(0,-10)  elif movePaddle == 'k':  rightPaddle.move(0,10)  elif movePaddle == 'q':  P1\_one.undraw()  P1\_two.undraw()  P1\_three.undraw()  P1\_four.undraw()  P1\_five.undraw()  P1\_six.undraw()  P1\_seven.undraw()  P1\_eight.undraw()  P1\_nine.undraw()  P1\_ten.undraw()  P1\_eleven.undraw()  P2\_one.undraw()  P2\_one.undraw()  P2\_two.undraw()  P2\_three.undraw()  P2\_four.undraw()  P2\_five.undraw()  P2\_six.undraw()  P2\_seven.undraw()  P2\_eight.undraw()  P2\_nine.undraw()  P2\_ten.undraw()  P2\_eleven.undraw()  pongBall.undraw()  rightPaddle.undraw()  leftPaddle.undraw()  menu(gameWindow)      #if ball goes beyond right side of screen  if pongBall.getCenter().getX() > WindowX - ballSize:  #remove ball  pongBall.undraw()  #counter for score  P2\_Counter += 1  #if red team score 1  if P2\_Counter == 1:  P2\_one.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if red team score 2  if P2\_Counter == 2:  P2\_one.undraw()  P2\_two.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if score 3 red team  if P2\_Counter == 3:  P2\_two.undraw()  P2\_three.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if red team score 4  if P2\_Counter == 4:  P2\_three.undraw()  P2\_four.draw(gameWindow)    #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 5  if P2\_Counter == 5:  P2\_four.undraw()  P2\_five.draw(gameWindow)    #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 6  if P2\_Counter == 6:  P2\_five.undraw()  P2\_six.draw(gameWindow)    #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 7  if P2\_Counter == 7:  P2\_six.undraw()  P2\_seven.draw(gameWindow)    #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 8  if P2\_Counter == 8:  P2\_seven.undraw()  P2\_eight.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 9  if P2\_Counter == 9:  P2\_eight.undraw()  P2\_nine.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if red team score 10  if P2\_Counter == 10:  P2\_nine.undraw()  P2\_ten.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Blue Team!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if red team score 11  if P2\_Counter == 11:  P2\_eleven.draw(gameWindow)  P2\_eleven.move(xSpeed,ySpeed)  P2\_eleven.undraw()  #animate Win  i = 0  while i < 375:  i+=1  message = messageGenerator("Blue Team Wins!!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #create menu and undraw  P1\_one.undraw()  P1\_two.undraw()  P1\_three.undraw()  P1\_four.undraw()  P1\_five.undraw()  P1\_six.undraw()  P1\_seven.undraw()  P1\_eight.undraw()  P1\_nine.undraw()  P1\_ten.undraw()  P1\_eleven.undraw()  P2\_one.undraw()  P2\_one.undraw()  P2\_two.undraw()  P2\_three.undraw()  P2\_four.undraw()  P2\_five.undraw()  P2\_six.undraw()  P2\_seven.undraw()  P2\_eight.undraw()  P2\_nine.undraw()  P2\_ten.undraw()  P2\_eleven.undraw()  pongBall.undraw()  rightPaddle.undraw()  leftPaddle.undraw()  menu(gameWindow)  #set ball to serve from red to blue  xSpeed = xSpeed + .0025  ySpeed = ySpeed + .00025  #if ball goes beyond left side of screen  if pongBall.getCenter().getX() < ballSize:  #remove ball  pongBall.undraw()  #counter for score  P1\_Counter += 1  #if red team score 1  if P1\_Counter == 1:  P1\_one.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if red team score 2  if P1\_Counter == 2:  P1\_one.undraw()  P1\_two.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if score 3 red team  if P1\_Counter == 3:  P1\_two.undraw()  P1\_three.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if red team score 4  if P1\_Counter == 4:  P1\_three.undraw()  P1\_four.draw(gameWindow)    #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 5  if P1\_Counter == 5:  P1\_four.undraw()  P1\_five.draw(gameWindow)    #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 6  if P1\_Counter == 6:  P1\_five.undraw()  P1\_six.draw(gameWindow)    #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.setTextColor("Red")  message.setTextColor("white")  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 7  if P1\_Counter == 7:  P1\_six.undraw()  P1\_seven.draw(gameWindow)    #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 8  if P1\_Counter == 8:  P1\_seven.undraw()  P1\_eight.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)    #if red team score 9  if P1\_Counter == 9:  P1\_eight.undraw()  P1\_nine.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if red team score 10  if P1\_Counter == 10:  P1\_nine.undraw()  P1\_ten.draw(gameWindow)  #animate score on screen  i = 0  while i < 400:  i+=1  message = messageGenerator("Score Red Team!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 3  i = 0  while i < 375:  i+=1  message = messageGenerator("3")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 2  i = 0  while i < 325:  i+=1  message = messageGenerator("2")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate 1  i = 0  while i < 275:  i+=1  message = messageGenerator("1")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #animate Serve  i = 0  while i < 225:  i+=1  message = messageGenerator("Serve!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()    #make a pong ball  number = randomNumber()  aBall = Ball(ballSize, number)  pongBall = makeBall(aBall)  pongBall.draw(gameWindow)  #if red team score 11  if P1\_Counter == 11:  P1\_eleven.draw(gameWindow)  P1\_eleven.move(xSpeed,ySpeed)  P1\_eleven.undraw()  #animate Win  i = 0  while i < 375:  i+=1  message = messageGenerator("Red Team Wins!!!!")  message.draw(gameWindow)  message.undraw()  message.draw(gameWindow)  message.setTextColor("Red")  message.undraw()  message.draw(gameWindow)  message.setTextColor("white")  message.undraw()  message.draw(gameWindow)  message.setTextColor("blue")  message.undraw()  #create menu  P1\_one.undraw()  P1\_two.undraw()  P1\_three.undraw()  P1\_four.undraw()  P1\_five.undraw()  P1\_six.undraw()  P1\_seven.undraw()  P1\_eight.undraw()  P1\_nine.undraw()  P1\_ten.undraw()  P1\_eleven.undraw()  P2\_one.undraw()  P2\_one.undraw()  P2\_two.undraw()  P2\_three.undraw()  P2\_four.undraw()  P2\_five.undraw()  P2\_six.undraw()  P2\_seven.undraw()  P2\_eight.undraw()  P2\_nine.undraw()  P2\_ten.undraw()  P2\_eleven.undraw()  pongBall.undraw()  rightPaddle.undraw()  leftPaddle.undraw()  menu(gameWindow)  #set ball to serve from red to blue  xSpeed = xSpeed - 0.0025  ySpeed = ySpeed - 0.00025  #if ball goes to high  if pongBall.getCenter().getY() > WindowY - ballSize:  ySpeed = -ySpeed  #if ball boes to low  if pongBall.getCenter().getY() < ballSize:  ySpeed = -ySpeed      #if statements to detect paddle collision with ball with right paddle  if pongBall.getCenter().getX() > rightPaddle.getCenter().getX() - PaddleXSize / 2 and pongBall.getCenter().getY() < (rightPaddle.getCenter().getY() + PaddleYSize / 2) and pongBall.getCenter().getY() > (rightPaddle.getCenter().getY() - PaddleYSize / 2) :  ySpeed = -ySpeed  xSpeed = -xSpeed  #if statements to detect paddle collision with ball left paddle  if pongBall.getCenter().getX() < leftPaddle.getCenter().getX() + PaddleXSize / 2 and pongBall.getCenter().getY() < (leftPaddle.getCenter().getY() + PaddleYSize / 2) and pongBall.getCenter().getY() > (leftPaddle.getCenter().getY() - PaddleYSize / 2) :  ySpeed = -ySpeed  xSpeed = -xSpeed    #after all conditions checked... move the ball according to modified speed  pongBall.move(xSpeed,ySpeed) |

Ball

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| Member | Action - Pseudocode |
|  | #class to create balls  class Ball(Circle):  #make a random int for y axis  number = randomNumber()  #object constructor with argument for ball size  def \_\_init\_\_(self, ballSize, number):  self.ballSize = ballSize  self.centerPointX = 200  self.centerPointY = number  self.Fill = 'yellow'  self.OutLine = 'Black'  #function to make a pong ball  def makeBall(ball):  #create a pongball from circle  pongBall = Circle(Point(ball.centerPointX, ball.centerPointY), ball.ballSize)  pongBall.setFill(ball.Fill)  pongBall.setOutline(ball.OutLine)  return pongBall |

Paddle

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| Member | Action - Pseudocode |
|  | #class to create paddles  class Paddle(Rectangle):    #object constructor with argument for paddles  def \_\_init\_\_(self, paddleXSize, paddleYSize, fill, outline):  self.PaddleXSize = paddleXSize  self.PaddleYSize = paddleYSize  self.Fill = fill  self.Outline = outline  #function to make left paddle  def makeLeftPaddle(leftPaddle, WindowY):  #create a paddle from rectangle  paddle = Rectangle(Point(5, WindowY / 2 - leftPaddle.PaddleYSize / 2), Point(leftPaddle.PaddleXSize + 5, WindowY / 2 + leftPaddle.PaddleYSize / 2))  paddle.setFill(leftPaddle.Fill)  paddle.setOutline(leftPaddle.Outline)  return paddle  #function to make right paddle  def makeRightPaddle(rightPaddle, WindowX, WindowY):  #create a paddle from rectangle  paddle = Rectangle(Point(WindowX - 5, WindowY / 2 - rightPaddle.PaddleYSize / 2), Point(WindowX - rightPaddle.PaddleXSize - 5, WindowY / 2 + rightPaddle.PaddleYSize / 2))  paddle.setFill(rightPaddle.Fill)  paddle.setOutline(rightPaddle.Outline)  return paddle |

Menus

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| Member | Action - Pseudocode |
|  | ###########################################################################################  ############### Menus ###########################  ###########################################################################################  #menu for program start  def startMenu():  #menu variables  WindowX = 400  WindowY = 200  #create menu  menuWindow = GraphWin("Menu", WindowX, WindowY)  menuWindow.setBackground("black")    #create menu and get selection  optionsText = Text(Point(200,100), "##########################\n########## PONG ##########\n##########################\n\nOne Player Game : press 1 : \n\nTwo Player Game : press 2: \n\nQuit : press 3 : ")  optionsText.setTextColor("white")  optionsText.draw(menuWindow)  #check user wishes, give instructions and pass into game types  while True:  userSelection = menuWindow.checkKey()  if userSelection == '1':  optionsText.undraw()  instructions = messageGenerator("Press 'w' to move up\nPress 's' to move down\nFirst to 11 wins\nIf you are scored on, you receive the serve\nPress q to return to menu")  instructions.draw(menuWindow)  i = 0  while i < 9000:  i+=1  instructions.setTextColor("white")  instructions.undraw()  onePlayerGame(menuWindow)  elif userSelection == '2':  optionsText.undraw()  instructions = messageGenerator("Press 'w' or 'i' to move up\nPress 's' or 'k' to move down\nFirst to 11 wins\nIf you are scored on, you receive the serve\nPress q to return to menu")  instructions.setSize(11)  instructions.draw(menuWindow)  i = 0  while i < 9000:  i+=1  instructions.setTextColor("white")  instructions.undraw()  Main(menuWindow)  elif userSelection == '3':  optionsText.undraw()  i = 0  while i < 325:  i+=1  goodBye = Text(Point(200,100), "Thanks for playing!")  goodBye.draw(menuWindow)  goodBye.setTextColor("white")  goodBye.setTextColor("red")  goodBye.setTextColor("blue")  goodBye.undraw()  menuWindow.close()  sys.exit(0) |