Graduate Project - Reitumetse Pulumo

May 2, 2017

In [52]:
```
#modules to import
from turtle import *
from random import randint
from random import choice
import csv
import os
```

In [57]:
```
os.chdir("/Users/rpulumo/Desktop/Graduate project")
print(os.getcwd())
```

```
/Users/rpulumo/Desktop/Graduate project
```

In [81]:
```
#creating the csv to store data in and adding column names
#to each column for easy visualization
with open("Guess the size.csv", "w") as f:
    writer = csv.writer(f)
    writer.writerows([["target", "left", "right", "correct response",
                       "user response 1", "opponent response"]])
```

In [82]:
```
start = input("Are you ready to have some fun? ")

t_sq_list = [60, 65, 70] #target square list
l_sq_list = [50, 45, 71] #left square list
r_sq_list = [62, 63, 39] #right square list

#lists first and second round
which_round = [1,2]

#lists where the sides of each square will be saved in the first
# round so they can be called in the second round
which_t_list = [] #for target square
which_l_list = [] #for left square
which_r_list = [] #for right square

#user_input2 will hold the responses of the second round
user_input2 = ["user response 2"]
```

```
#the data will be saved in this list so it can be added
#to the csv file
data_list = []

for which in which_round:

    which_set = 0
    while which_set != 3:
        if which == 1:
            #choosing any of the 3 values from each list and add it
            #to the appropriate list so it can be used for round 2
            which_t = choice(t_sq_list)
            which_t_list.append(which_t)
            which_l = choice(l_sq_list)
            which_l_list.append(which_l)
            which_r = choice(r_sq_list)
            which_r_list.append(which_r)
        elif which == 2:
            #to call the sides of of the squares so they appear in the
            #order they appeared in round 1
            which_t = which_t_list[which_set]
            which_l = which_l_list[which_set]
            which_r = which_r_list[which_set]

        #clears the graphics window
        reset()
        #this is going to be the color of the first square we draw
        color("purple")
        #just like holding the pen in the air before we draw
        pensize(5)
        penup()
        #specifying where we want to start drawing from
        setpos(0,0)
        #putting the pen down onto the canvas so we can draw
        pendown()
        #drawing the target square
        for i in range(4):
            forward(which_t)
            right(90)
        penup()
        t_area = which_t**2
        if which == 1:
            #remove so the same value is not used again
            t_sq_list.remove(which_t)

        #drawing the left square
        color("green")
        pensize(5)
```

```
        setpos(200,0)
        pendown()

        for i in range(4):
            forward(which_l)
            right(90)
        penup()
        l_area = which_l**2
        if which == 1:
            #remove so the same value is not used again
            l_sq_list.remove(which_l)

        #drawing the right square
        color("red")
        pensize(5)
        setpos(-200,0)
        pendown()
        for i in range(4):
            forward(which_r)
            right(90)
        penup()
        r_area = which_r**2
        if which == 1:
            #remove so the same value is not used again
            r_sq_list.remove(which_r)

        if abs(t_area - l_area) < abs(t_area - r_area):
            correct = "1"
        elif abs(t_area - r_area) < abs(t_area - l_area):
            correct = "2"

        print("Which square has the closest area to the purple square?")
        user_input = input("1 for left, 2 for right ")
        if user_input != "1" and user_input != "2":
            user_input = input("Please enter 1 or 2")

        if which == 1:
            with open("Guess the size.csv", "a") as f:
                writer = csv.writer(f)
                writer.writerows([[which_t, which_l, which_r, correct,
                                   user_input, randint(1,2)]])
        elif which == 2:
            user_input2.append(user_input)


        which_set += 1
    if which == 1:
        print("these were your opponent's responses compared to yours")
```

```
                with open("Guess the size.csv", "r") as f:
                    for line in f:
                        cell = line.split( "," )
                        print ("your response:", cell[4],
                               "your opponent's response:", cell[5])
                ready = input("Type 'Y' when ready to move to the next round")

            elif which == 2:
                with open ("Guess the size.csv", "r") as f:
                    reader = csv.reader(f)
                    data = list(reader)
                    for i,j in zip(data, user_input2):
                        i.append(j)
                        data_list.append(i)
                with open ("Guess the size.csv", "w") as f:
                    writer = csv.writer(f)
                    writer.writerows(data_list)
                first = 0
                second = 0
                with open ("Guess the size.csv", "r") as f:
                    reader = csv.reader(f)
                    responses = list(reader)
                    for line in responses:
                        if line[4] == line[3]:
                            first += 1
                        if line[6] == line[3]:
                            second+= 1

                if second > first:
                    print("Your score improved from {} out of 3 to {} out of 3"
                          .format(first, second))
                elif first > second:
                    print("Your score dropped from {} out of 3 to {} out of 3"
                          .format(first, second))
                elif second == first:
                    print("Your first and second scores are equal, {} out of 3"
                         .format(first))

                print("It's been fun")
```

```
Are you ready to have some fun? yes
Which square has the closest area to the purple square?
1 for left, 2 for right 1
Which square has the closest area to the purple square?
1 for left, 2 for right 2
Which square has the closest area to the purple square?
1 for left, 2 for right 2
these were your opponent's responses compared to yours
```

```
your response: user response 1 your opponent's response: opponent response

your response: 1 your opponent's response: 1

your response: 2 your opponent's response: 2

your response: 2 your opponent's response: 2

Type 'yes' when you are ready to move to the next roundyes
Which square has the closest area to the purple square?
1 for left, 2 for right 2
Which square has the closest area to the purple square?
1 for left, 2 for right 1
Which square has the closest area to the purple square?
1 for left, 2 for right 1
Your score improved from 1 out of 3 to 2 out of 3
It's been fun
```

In [ ]: