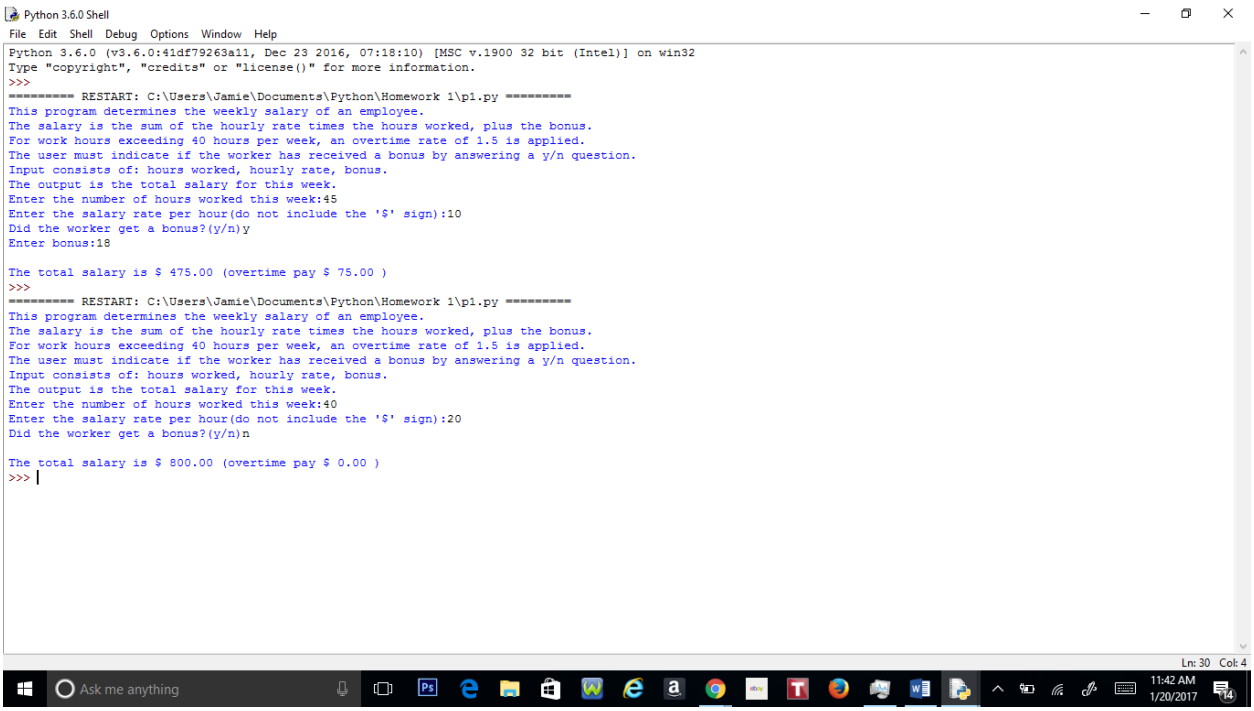
Homework 1
Jamie Andrews

Problem 1:

```
#-------Homework 1 Question 1 by Jamie Andrews-------

#Import the libraries
import math

# Making the print statements for introduction
print("This program determines the weekly salary of an employee.")
print("The salary is the sum of the hourly rate times the", \
      "hours worked, plus the bonus.")
print("For work hours exceeding 40 hours per week, an overtime rate", \
      "of 1.5 is applied.")
print("The user must indicate if the worker has received a", \
      "bonus by answering a y/n question.")
print("Input consists of: hours worked, hourly rate, bonus.")
print("The output is the total salary for this week.")

# End of print statements for introduction
# Now for program executable statements

# Enter the amount of hours of work (must be float)
# Edit 1/17/17 at 9:00 AM : This line works
hour = float(input('Enter the number of hours worked this week:'))

# Enter the amount of pay per hour (must be in hour)
# Edit 1/17/17 at 9:04 AM : line works but I added the ':' in input statement
rate = float(input("Enter the salary rate per hour" \
                   "(do not include the '$' sign):"))
#Answer y/n question
#Edit 1/17/17 at 9:12 AM : Line did not work because I used int instead of
str
#Edit 1/17/17 at 9:14 AM : Line now works
#Edit 1/17/17 at 9:55 AM : removed string from line (not needed)
bonus = input("Did the worker get a bonus?(y/n)")

#Preparing if/else statement
#Edit 1/17/17 at 10:22 AM : if/else statement finally fixed
```

```
if bonus == 'y':
    input("Enter bonus:")
    print("")
elif bonus == 'n':
    print("")
else:
    print("")

#preparing second if/else statement
#Edit 01/17/17 at 11:20 AM : if/else statement finally fixed
if hour > 40:
        #40 hours or more is overtime
        overtime = (hour - 40) * rate * 1.5
        #The remaining 40 hours will be under the regular salary
        hour = 40

else:
        #Otherwise no overtime
        overtime = 0

#Calculations for the regular salary and total salary
regular = hour * rate
salary = regular + overtime

#print statement for total salary
print("The total salary is $", "%.2f" % salary, \
      "(overtime pay $", "%.2f" % overtime,  \
      ")")
#Edit 01/17/17 at 11:43 AM : p1.py is finished, total time was 4 hours.
```



Problem 2:

```
#-----Homework 1 Question 2 by Jamie Andrews -----

#Going to import math first to save the trouble for later
import math
import pylab

#while loop will be installed here
while True:
    #Claim my three variables a, b and c
    #Edit 01/17/17 at 11:50 AM : these three lines work
    a = float(input("Enter a:"))
    b = float(input("Enter b:"))
    c = float(input("Enter c:"))

    #z will represent the discriminant in my program
    z = (b**2)-(4 * a * c)

    #If/Else statement used for the quadratic formula
    #Edit 01/19/17 at 10:00 AM : This statement works
    if z < 0:
        print("No Real Solutions")
    elif z == 0:
```

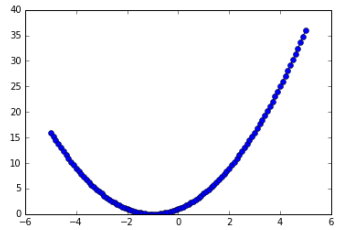
```
    x1 = ((-b + math.sqrt(z)) / (2 * a))
    print("One Solution:", "%.5f" % x1)
else:
    x1 = ((-b + math.sqrt(z)) / (2 * a))
    x2 = ((-b - math.sqrt(z)) / (2 * a))
    print("Two Solutions:", "%.5f" % x1, "and", "%.5f" % x2)

#Inner loop for the graphing portion of the code
#Preparing the x and y graphs
xs = []
ys = []
#Preparing the domain for the graphing function
x = -5
x0 = 5
#N points
n = 100
#The delta between points
dx = (x0 - x)/n
#Declaring the second while loop
while x <= x0:
    xs.append(x)
    #Y function should be here
    y = (a*x)**2 + (b*x) + c
    ys.append(y)
    x += dx
#After the loop
pylab.plot(xs,ys,"bo-")
pylab.show()
```

Spyder (Python 3.5)

File Edit Search Source Run Debug Consoles Projects Tools View Help

```
#-----Homework

#Going to impor
import math
import pylab

#while loop wil
while True:
    #Claim my t
    #Edit 01/17
    a = float(i
    b = float(i
    c = float(i

    #z will rep
    z = (b**2)-

    #If/Else st
    #Edit 01/19
    if z < 0:
        print("
    elif z == 0
        x1 = ((
        print("
    else:
        x1 = ((
        x2 = ((
        print("

    #Inner loop
    #Preparing
    xs = []
    ys = []
    #Preparing
    x = -5
    x0 = 5
    #N points
```

```
Enter a:1

Enter b:2

Enter c:1
One Solution: -1.00000
```




```
Enter a:
```

Permissions: RW End-of-lines: CRLF Encoding: UTF-8-GUESSED Line: 1 Column: 1 Memory: 47 %

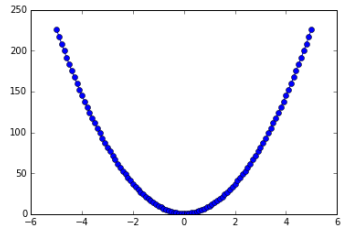
Ask me anything 12:38 PM 1/20/2017

Spyder (Python 3.5)

File Edit Search Source Run Debug Consoles Projects Tools View Help

```
#-----Homework

#Going to impor
import math
import pylab

#while loop wil
while True:
    #Claim my t
    #Edit 01/17
    a = float(i
    b = float(i
    c = float(i

    #z will rep
    z = (b**2)-

    #If/Else st
    #Edit 01/19
    if z < 0:
        print("
    elif z == 0
        x1 = ((
        print("
    else:
        x1 = ((
        x2 = ((
        print("

    #Inner loop
    #Preparing
    xs = []
    ys = []
    #Preparing
    x = -5
    x0 = 5
    #N points
```

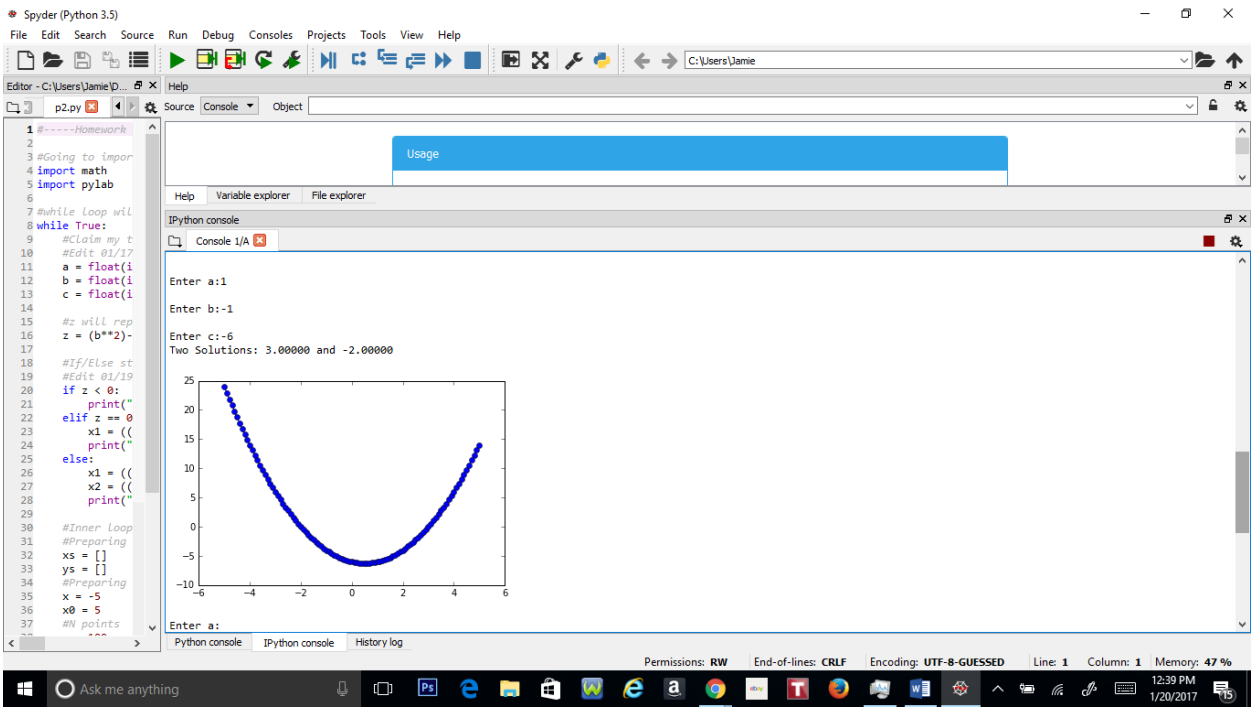
```
Enter a:3

Enter b:0

Enter c:1
No Real Solutions
```




```
Enter a:
```

Permissions: RW End-of-lines: CRLF Encoding: UTF-8-GUESSED Line: 1 Column: 1 Memory: 47 %

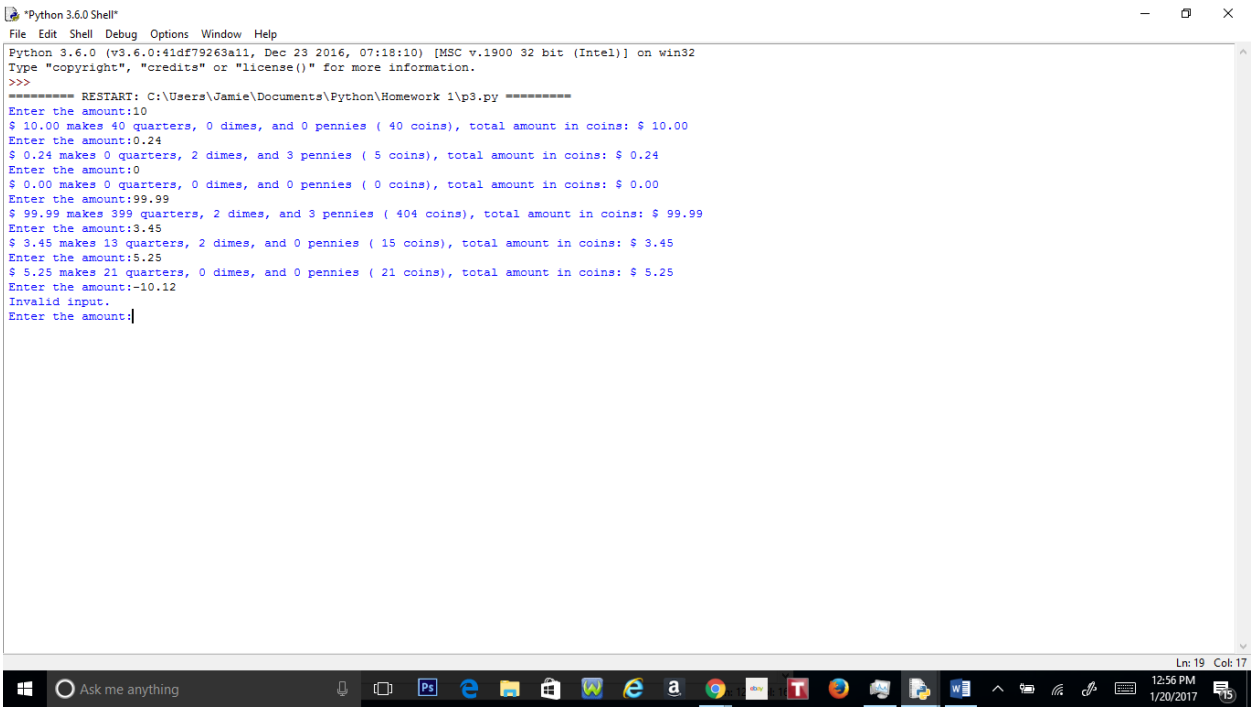
Ask me anything 12:39 PM 1/20/2017



Problem 3:

```
#-----Homework #1 Question 3 by Jamie Andrews-----

#---------Algorithm Here-----------
#1. Make sure to import all libraries before writing out anything.
#2. Make a while loop for program to calculating coin change.
#3. Declare the variables for quarter, dime, and penny.
#4. Declare an input to enter the amount with.
#5. Declare float variable to equal to amount the user has inputted in
system.
#6. Make if/else statement for if input is negative, the program should print
"Invalid input."
# Otherwise the program moves on to step 7.
#7. Declare 5 variables for calculations for the amount of quarters, dimes
and pennies in the amount
#user has inputted.
#8. Declare a variable to calculate the total of coins in amount inputted.
#9. Print the statement stating the amount the user has inputted, number of
coins, and
#coin total.

#1.Import the libraries
import math
```

```
#2.While loop
while True:
    #3.declare variables
    quarter = .25
    dime = .10
    penny = .01

    #4. Make input
    givemoney = input("Enter the amount:")
    #5. Declare float
    givemoney = float(givemoney)
    #6. If input negative
    if givemoney < 0:
        print ("Invalid input.")
    else:
        #7. Declare variables for calculations
        q = givemoney // quarter
        qtotal = givemoney - (q * quarter)
        d = qtotal // dime
        dtotal = qtotal - (d * dime)
        p = dtotal // penny

        #8. Declare variable for coin total
        c = q + d + p

        #9. Print statement
        print("$","%.2f" % givemoney, "makes","%i" % q , "quarters,","%i" %
d, "dimes, and", \
          "%i" % p, "pennies (", "%i" % c, "coins), total amount in coins:
$", \
          "%.2f" % givemoney)
```


Python 3.6.0 Shell
File Edit Shell Debug Options Window Help
Python 3.6.0 (v3.6.0:41df79263a11, Dec 23 2016, 07:18:10) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:\Users\Jamie\Documents\Python\Homework 1\p3.py ==========
Enter the amount:10
$ 10.00 makes 40 quarters, 0 dimes, and 0 pennies (40 coins), total amount in coins: $ 10.00
Enter the amount:0.24
$ 0.24 makes 0 quarters, 2 dimes, and 3 pennies (5 coins), total amount in coins: $ 0.24
Enter the amount:0
$ 0.00 makes 0 quarters, 0 dimes, and 0 pennies (0 coins), total amount in coins: $ 0.00
Enter the amount:99.99
$ 99.99 makes 399 quarters, 2 dimes, and 3 pennies (404 coins), total amount in coins: $ 99.99
Enter the amount:3.45
$ 3.45 makes 13 quarters, 2 dimes, and 0 pennies (15 coins), total amount in coins: $ 3.45
Enter the amount:5.25
$ 5.25 makes 21 quarters, 0 dimes, and 0 pennies (21 coins), total amount in coins: $ 5.25
Enter the amount:-10.12
Invalid input.
Enter the amount:
Ln: 19 Col: 17
Ask me anything
12:56 PM
1/20/2017