CS 115 Exam 1 (Section 1) Fall 2016 Thu. 09/22/2016

Name: ____

Rules and Hints

- You may use one handwritten 8.5 × 11" cheat sheet (front and back). This is the only additional resource you may consult during this exam. *No calculators.*
- Explain/show work if you want to receive partial credit for wrong answers.
- As long as your code is correct, you will get full credit. No points for style.
- When you write code, be sure that the indentation level of each statement is clear.

Grade

Problem	**Your Score**	**Max Score**
Problem 1: Trace code		40
Problem 2: Write snippets of code		30
Problem 3: Write a complete program		30
Total		100

Problem 1: Trace code (40 points)

What will print to the screen when each of the following snippets of code is executed in PyCharm or in the Online Python Tutor?

Be very clear with spacing, line breaks, etc.

Treat each sub-problem as an independent question.

All questions in this section are worth 5 points.

Problem 1A

```
num = 24
print(num-1)
```

Problem 1B

```
y = 3**2
y = y + 2
print(y)
```

Problem 1C

```
a = 2
b = 7
c = b // a
d = b % a
print(c, d, sep = '*')
```

Problem 1D

```
ssu = 'Sonoma State'
print('Welcome To', ssu)
print(ssu+'Welcomes You')
```

Problem 1E

```
k = 0
for i in range(1, 5):
    print(i)
    k = k + i
print(k)
```

Problem 1F

```
for i in range(2):
    for j in range(2, 4):
        print(j)
    print(i)
```

Problem 1G

```
y = "cs115"
if y != "cool":
    print(y)
if y < "cool":
    print("hot")
z = (y >= "cool")
print(z)
```

Problem 1H

```
grade = 80
if (grade < 100):
    print("You are human and", end = ' ')
if (grade > 90):
    print("You got an A!")
elif (grade > 80):
    print("You got a B!")
else:
    print("You got some other grade.")
```

Problem 2: Write snippets of code (30 points)

Write snippets of code to do the following. Your code should only print the requested output. You will lose points for printing additional output.

You can assume that *all your snippets are enclosed within a main function* and that *any necessary libraries have been imported.* You only need to write the specific lines of code that accomplish each task.

Problem 2A (10 points)

Ask the user for temperature in Celsius (C), convert it into Fahrenheit (F) and print it.
Helpful fact:

- Formula representing the conversion is given by: $F = \frac{9}{5}C + 32$

Problem 2B (10 points)

Presidential forecasting system: This program will forecast the chances of a candidate to become president.

- Ask the user to enter 333 integers one by one (Don't worry - your user is patient because they are being paid by the candidate to determine his/her chances!).
- Calculate the sum of these numbers.
- If the sum is a multiple of 6, print "You will be the one!" otherwise print "System malfunction: try again!".

Problem 2C (10 points)

For this question, assume that the graphics library has been imported. The snippet of code below opens a graphics window and draws one rectangle into it.

Insert snippet of code that will:

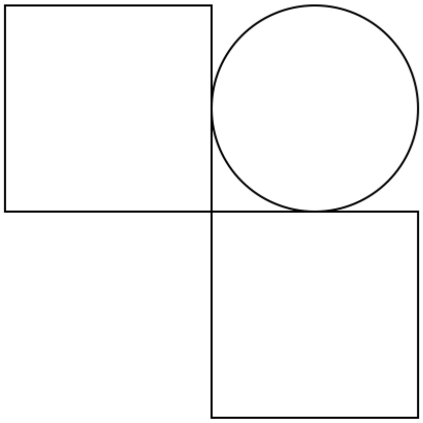
- Draw a circle of radius 50 whose center is +100 units in the x-axis from the center of rectangle and same location in the y-axis as the center of rectangle.
- Draw a rectangle of the same size as the first rectangle whose center has the same x-coordinate as the circle's center but is +100 units in the y-axis from the center of circle.

Final output is given below at the bottom of the page.

```
window = GraphWin('Shapes', 500, 500)

r1 = Rectangle(Point(0, 0), Point(100, 100))
r1.draw(window)
```

```
window.getMouse()
window.close()
```



Problem 3: Write a complete program (30 points)

For this problem, you must write a complete program. That includes a docstring, a `def main()`, any necessary library imports, etc.

Read the instructions carefully before you start coding! If you get stuck, try to maximize your partial credit. Your program should do the following:

- Ask the user to enter the number of their all time favorite movies. If this number is not positive, print an error message and exit the program.
- For each movie, ask the user to enter its name and the number of sequels to it. You may assume they enter a number ≥ 0.

After the user has entered all of their data (see sample output below for an **example**):

- Print the name of the movie with the maximum number of sequels. In the event of a tie, print any of the tied movies.
- Print the name of the movie with the least number of sequels. In the event of a tie, print any of the tied movies.
- Print the total number of movies that have sequels.
- Calculate the proportion of movies that have sequels (number of movies that have sequels divided by total number of movies). If this number is less than 33%, print "Save the sequels!"; else if its less than 66%, print "Sequel or not: you are going!"; else print "You are a Sequel Buff!" (Note: In the sample output below, the proportion of movies with sequels is equal to $3/5 = 0.6$).

Formatting of your program should match the sample output below. User input is *italicized and underlined*.

```
Enter number of your all time favorite movies:  5

Enter name of movie 1:  Inception
Enter number of sequels:  0
Enter name of movie 2:  Hunger Games
Enter number of sequels:  4
Enter name of movie 3:  Titanic
Enter number of sequels:  0
Enter name of movie 4:  Fast and the Furious
Enter number of sequels:  8
Enter name of movie 5:  Twilight
Enter number of sequels:  4

***Showtime analysis***
Movie with largest number of sequels:  Fast and the Furious
Movie with lowest number of sequels:  Inception
There are a total of 3 movies that have sequels
Sequel or not:  you are going!
```

Problem 3, continued