CSE 1310 – Section 1 – Summer II 2012
Midterm 1, Wednesday 07/18/2012

Name: _____ .

Student ID: _____ .

Total exam points: 100.

Score table:

Question	Points	Out of
1		10
2		10
3		10
4		10
5		10
6		10
7		10
8		10
9		10
10		10
Total		100

Question 1 - 10 points

What does this program print?

```
w = 5
x = 2
y = 5.0
z = 2.0
print(w/x, w%x, y/z, int(y/z))
```

Question 2 - 10 points

```
a2 = input("Enter an integer: ")
a = int(a2)

if a % 2 == 1:
    if a * 2 != 6:
        a = a + 4
    else:
        a = a / 3
else:
    if a <= 10:
        a = a * 2
    else:
        a = a - 2

print(a)
```

Given the above code, what will the program print if the user inputs the following numbers:

- 3

- 4

- 12

- 5

Question 3 – 10 points

What does this program print?

```
for num in range(41, 50):
    if ((num % 2 == 0) and (num > 43)) or (num == 41):
        print(num)
```

Question 4 – 10 points

What does this program print?

```
stop = 4
x1 = 0
x2 = 1

count = 0
while count <= stop:
    if count == 0:
        result = 0
    elif count == 1:
        result = 1
    else:
        result = x1 + x2
        x1 = x2
        x2 = result
    print(result)
    count = count + 1
```

Question 5 – 10 points

Write a program that asks the user for a number N from 0 to 100, determines which of the following ranges the number belongs to, and prints the associated message:

	Range	**Message**
•	0 <= N <= 9:	"ones"
•	10 <= N <= 19	"tens"
•	20 <= N <= 29	"twenties"
•	30 <= N <= 39	"thirties"
•	N >= 40	"forties+"

Question 6 - 10 points

Triangle inequality states that the sum of the lengths of any two sides of any triangle must be greater than or equal to the length of the third side (i.e. (a + b) >= c). Write a program that asks the user for three numbers, *a*, *b*, and *c* (which need to be floats) and checks to see if a triangle can be created using *a*, *b*, and *c* as the length of the sides. To do so, your program should:

- Ask the user for *a*
- Ask the user for *b*
- Ask the user for *c*
- Check if *a* + *b* is greater than or equal to *c*
- Check if *a* + *c* is greater than or equal to *b*
- Check if *b* + *c* is greater than or equal to *a*
- If all conditions are true, print “triangle”
- Otherwise, print “not a triangle”

Question 7 - 10 points

Write a program that calculates simple interest. The program must:
1. Prompt the user for the principal amount (the amount borrowed)
2. Prompt the user for the interest rate as a percentage per year
3. Prompt the user for the number of years the principal will collect interest.
4. Print the calculated amount of interest to the screen

Recall the formula for simple interest: **Interest = Principal*Interest_Rate*Years**. Remember that the percentage value must be converted to the proper form for multiplication, i.e. if the user enters 9 for 9%, it needs to be converted to 0.09 (or 9/100).

Question 8 - 10 points

Write a program that

1. Asks the user to enter an integer K from 1 to 100.
2. If K is between 10 and 20 (including 10 and 20), the program prints out K divided by 5 using integer division. If 20 < K <= 50, the program prints the remainder of K divided by 5. If K < 10 or K > 50, the program prints K.

For example, if K = 14, the program prints 2; if K = 33, the program should print 3; if K = 3 the program should print 3.

Question 9 - 10 points

Mr. Bugs wants to write a program with the following requirements:

- Asks the user to enter the number of pianos he sold.
- If the user did not sell any pianos, prints out a message about it being a slow day and better luck tomorrow.
- If the number of pianos sold is at most 3, prints out a good job message.
- Otherwise it prints out a message that the salesman gets a bonus

To Mr. Bugs great frustration, the program does not behave according to the requirements. In fact the program does not even run. What is wrong with the program? What would be a corrected version? For the corrected version, you do not have to rewrite the whole program, just indicate (precisely and unambiguously) the changes that are needed. Warning: there might be more than one error. Look very carefully at each line.

```
num_sold = input("Number of pianos sold today: ")
if num_sold = 0:
    print("It was a slow day.")
    print("Better luck tomorrow.")
elif num_sold <= 3:
    print("Good job.")
else:
print("Congratulations, you've earned a bonus!")
```

Question 10 - 10 points

Mr. Bugs wants to write a program that satisfies the following requirements:

- It prints out every integer from 0 and 100 that is divisible by 5 (there will be no remainder when the number is divided by 5).
- It uses a `while` loop, and not a `for` loop.

Unfortunately, the program does not behave properly. What is wrong with the program? What would be a corrected version? For the corrected version, you do not have to rewrite the whole program, just indicate (precisely and unambiguously) the chances that are needed. There might be more than one error.

```
a = 0
while a <= 100:
    if (a % 5) != 0:
        continue
    print(a)
    a = a+1
```