We need your ID information on both this test paper and the Scantron form.

USE A PENCIL on the Scantron form. No pens, please! If you do not have a pencil, ask the Professor or TAs.

At the top of your Scantron form, please fill in your name.
For **Subject**, put ECS 10.
For **Test No.**, put 3, for **Date** put 10/22.
For **Hour** put THE DAY AND TIME OF YOUR SECTION, eg Th8 or F11. This is NOT todays date and time. It is time that your discussion section meets.
For **Test Form**, in the box on the right, FILL IN THE BUBBLE for A. There are multiple versions of this test.
Write your ID number in the box on the right, and fill in the bubbles.

Then turn this test over and enter your information ON THE BACK.
Multiple choice: Fill in the bubble corresponding to the correct answer on the Scantron form.

Choose only ONE correct answer for each of the multiple choice questions. None of the questions is intended to have more than one right answer. If two or more answers are filled in, you will get no credit.

There is no penalty for wrong answers, so it is better to guess than to leave the problem blank. Always fill in one bubble.

You can erase on the Scantron. Be sure to erase completely and make sure there are no stray pencil marks on the Scantron.

1. The line...

    playing = "True"

    a) is a Boolean expression
    b) causes an error because = should be ==
    c) assigns the string "True" to the variable playing
    d) assigns the Boolean value True to the variable playing
    e) causes an error because "True" should be "true"

2. The following program:

    amount = 200.00
    percent = 25.0
    amount * percent/100
    print amount

    a) prints 50
    b) prints 200
    c) prints 50.0
    d) prints 200.0
    e) causes an error.
3. After executing this line,

\[ x = 7 \]

which of the following expressions are true?

1. \( x > 5 \) and \( x < 10 \)
2. \( x > 5 \) or \( x < 10 \)
3. \( x > 5 \) and \( x > 10 \)
4. \( x > 5 \) or \( x > 10 \)

a) 1, 2 and 3  
b) 1, 2 and 4  
c) 2 ,3 and 4  
d) 1, 3 and 4  
e) none of the above.

4. This little program:

```python
answer = raw_input("Enter heads (h) or tails (t):")
if not (answer == h and answer == t):
    print "Not a valid response."
```

a) prints the message if the user enters \( h \) or \( t \).  
b) prints the message if the user doesn’t enter \( h \) or \( t \).  
c) always prints the message.  
d) never prints the message.  
e) might cause an error, depending on what user enters.

5. This program:

```python
balance = 100.0
rate = 13.5
month = 0
while month < 12:
    balance = balance + balance*rate/100.0
    print "Balance is ", balance
```

a) will print out the balance eleven times.  
b) will print out the balance twelve times.  
c) will print out the balance thirteen times.  
d) will enter an infinite loop.  
e) will cause an error.
6. This program:

```python
age = raw_input("Enter your age: ")
int(age)
print "You can retire in",65-age,"years!"
```

a) will always run without any errors.
b) might run without any errors, depending on what the user enters.
c) can never run without any errors.

7. Recall that the function `helper.isFloat()` returns True if its argument is a string that can be converted into a float, and False otherwise. So this program will...

```python
import helper
answer = ""
while not helper.isFloat(answer):
    answer = raw_input("Enter the interest rate:")
rate = float(answer)
print "The rate is: ", rate
```

a) ask for input until the user enters a string that can be converted to a float, and then print the rate.
b) ask for input until the user enters a string that cannot be converted to a float, and then print the rate.
c) go into an infinite loop.
d) cause an error.
e) possibly cause an error, depending on what the user enters.

8. In the program below...

```python
payment = 30
balance = 100
while balance > 0:
    balance = balance-payment
    if balance == 0:
        print "Final payment!"
print "Balance is ", balance
```

a) the while loop is an infinite loop.
b) the payment is too small to ever pay off the balance.
c) the string "Final payment!" will never be printed.
d) the variable balance will be zero after the final payment.
e) none of the above.
9. Here are some lines from a quiz program, not necessarily correct. The user will get...

```python
if answer != "a":
    print "Wrong answer."
if answer == "b":
    print "Partial credit."
    points = points + 1
else:
    print "Correct answer."
    points = points + 3
```

a) zero points for a, one point for b, and three points for c
b) zero points for a, four points for b, and three points for c
c) three points for a, four points for b, and zero points for c
d) three points for a, one point for b, and zero points for c
e) none of the above.

10. Assume that the variable `count` contains an integer. After the following lines, the variable `count` could possibly contain...

```python
if count == 0:
    count = 1
elif count == 1:
    count = 2
else:
    count = 0
```

a) 1, 2 or 0
b) 1, 3 or 0
c) only 2 or 0
d) only 1 or 2
e) only 0

11. After the following lines, the variable `x` contains...

```python
rate = 18.0/12
y = int(rate)
x = str(y)
```

a) the integer 1
b) the integer 1.5
c) the floating point number 1.5
d) the string "1"
e) the string "1.5"

We observed in class that an investment at 7%, compounded monthly, more than doubles its value after ten years. In finance, they would say the "doubling time" for 7% compounded monthly is ten years. Write a short program that takes an annual interest rate as input, and figures out the doubling time if it is compounded monthly. Here is an example of what the output of your program should look like (for a very large interest rate of 60%, just to keep the output short):

```
Enter annual interest rate: 60
The monthly interest rate is 5.0 percent
Month= 1 Balance= 105.0
Month= 2 Balance= 110.25
Month= 3 Balance= 115.7625
Month= 4 Balance= 121.550625
Month= 5 Balance= 127.62815625
Month= 6 Balance= 134.009564062
Month= 7 Balance= 140.710042266
Month= 8 Balance= 147.745544379
Month= 9 Balance= 155.132821598
Month= 10 Balance= 162.889462678
Month= 11 Balance= 171.03395812
Month= 12 Balance= 179.585632602
Month= 13 Balance= 188.564914232
Month= 14 Balance= 197.993159944
Month= 15 Balance= 207.892817941
The doubling time is 1 years and 3 months
```

Some details: There are a number of ways to do this using a `while` loop. You should print out the doubling time at the end in years and months, just like in the example. Notice that the monthly interest rate is a floating-point number.

We will not take off points if entering something that is not a number causes an error, or if some crazy user input causes the program to enter an infinite loop. But remember that in a real program it is essential to handle these possibilities!

Comments are **required**, and may help us figure out what you are trying to do and so raise your score.
Test form A

Name ____________________________________________________

Last four digits of Student ID Number ___________________________________

Date and Time OF YOUR DISCUSSION SECTION ____________________________________

Section Number ____________________