

---

# COMP 115      Robots, Games, and Problem Solving

---

## Lab #5

In this lab, you will write programs to practice the use of decisions.

In order to complete this lab, you may need a few modifiers that can be used in a print statement. We have seen that, by default, a print statement will add a space between any two elements separated by a comma in the print statement, and change line at the end of the print statement.

Type the following lines in a Python program and see what it does. Can you figure out how to use the modifiers?

```
print(1,2,3,4,5)
print(1,2,3,4,5, sep="STOP")
print(1,2,3,4,5, sep="")
print(1,2,3,4,5, end="END\n")
print(1,2,3,4,5, end="END1")
print(1,2,3,4,5, end="END2\n")
print(1,2,3,4,5, sep="FOO", end="BAR\n")
```

1. A CS professor gives letter grades to his students according to the following table:

%	Grade
97-100	A+
93-96	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
... all the way down to...	
63-66	D
60-62	D-
< 60	F

Write *two* programs that ask the user for a number between 0 and 100 (you can assume it is an integer) and display the corresponding grade as follows:

- the first program should do all the work in a single `if` statement. Once you got it working, find a way to modify it so that there is at most one test (no `and` or `or`) in each `if` and `elif` line

- the second program should do the work in 2 `if` statements, the first one displays only the letter grade, the second one displays the suffix (+ or -) when applicable.

\_\_\_\_\_ Show me the result when you are done.

2. The salary policy at company FooDingBar states that any time above 50 hours a week is considered overtime and paid double the usual hourly wage. Write a program that asks the user their hourly salary and the number of hours they worked this week and prints the amount they will be paid this week. Be careful, sometimes, employees work less than 50 hours, sometimes, they work more than 50 hours. The program should also check that the number of hours entered by the employee is plausible (how many hours are there in a week?)
3. The speeding ticket fine policy in Podunksville is \$50 plus \$5 for each mph over the limit, plus a penalty of \$200 for any speed over 90 mph (we assume that the speed limit is always below 90 mph). Write a program that asks the user for a speed limit, a measured speed and either prints a message indicating the speed was legal, or prints the amount of the fine if the speed is illegal.

\_\_\_\_\_ Show me the result when you are done.

4. (not hard, but long) Write a program that accepts a date in the form MM-DD-YYYY and outputs whether or not the date is valid. For example, 05-25-1962 is valid but 09-31-2000 is invalid (September has only 30 days). Your program should take leap years into account (a year is a leap year if it is divisible by 400, OR if it is divisible by 4 but not by 100).

\_\_\_\_\_ Show me the result when you are done.

When you are done, write your name on the sheet and hand it to the lab instructor.

Name: \_\_\_\_\_