

A201/A597 Introduction to Programming I

First Summer 2007

Lecture Three: Thursday May 10, 2007 (Lindley Hall 102)

First some warmup questions:

- How many months have twenty-eight days?
- Two coins add up to 55 cents. One of them is not a nickel. What are the coins?
- In England how many bricks does it take to complete a house?
- What five letter word becomes shorter when you add two letters to it?
- What four letter word becomes shorter when you add two letters to it?
- What is the number of letters in the correct answer to this question?

On ambiguity and interpretation. The need to be excruciatingly clear when programming.

Each language defines an own set of tools.

We need to use them to express clearly our computations/solutions.

Python. Here's what we know so far:

- a) create expressions with numbers and strings and print them
- b) convert between strings and numbers (both integers and floating-point)
- c) get user input with `raw_input` (which returns a string)

Today we will cover the following topics:

- a) escape characters in strings (see page 25 in the text)
- b) continuing a long statement on the next line (p.20)
- c) suppressing a new line in print with comma (p. 27)
- d) creating variables and assigning values to them (pp. 33-35, but also 46).
- e) using string methods (p. 40)

Note the tables on p. 45 (selected type conversion functions), and p. 32 (math operators),

We will also introduce if statements and branching structures (pp. 51-65) .

Lab Three: Thursday May 10, 2007 (ED2025)

Use today's lab to read and experiment with the material on pp. 51-65 in the text.

Then solve this problem:

Write a program (called `Eight`)

- that translates a number between 0 and 4
- into the closest letter grade.

For example,

- the number 2.8 (which might have been the average of several grades)
- would be converted to B-.

Break ties in favor of the better grade; for example 2.85 should be a B.

Here's a sample run of such a program:

```
Enter numeric score then press Enter : 3.85
A

Enter numeric score then press Enter : 3.84
A-

Enter numeric score then press Enter : 3.5
A-

Enter numeric score then press Enter : 3.49
B+

Enter numeric score then press Enter : 3.1
B

Enter numeric score then press Enter : 10
A+

Enter numeric score then press Enter : -2
Error: Score out of range.

Enter numeric score then press Enter : -0.5
Error: Score out of range.
```

This is your lab assignment three.

We will soon start collecting homework and lab assignments.

Homework One

1. Write a program that reads a line of text from the user and writes it back with all the vowels surrounded by parens. Here's an example of how the program might work:

```
Type a string: nothing  
n(o)th(i)ng
```

Here's another example:

```
Type a string: this is a longer string  
th(i)s (i)s (a) l(o)ng(e)r str(i)ng
```

2. Write a program that removes all vowels from a string of characters. Essentially the program asks the user for a line of input, then writes back only the consonants in the line, Here's how your program might look when finished.

```
Please enter a string: good evening and welcome to minneapolis  
The string without vowels is: (gd vnng nd wlcm t mnnpls)
```

3. Given a car's mileage (expressed in miles per gallon) and the amount of fuel in the car's tank (expressed in gallons) write a formula to determine the autonomy of that car in miles. Then use the formula that you wrote to write a program that asks the user for the mileage of a car and the amount of fuel in the car and prints back the autonomy of the car in miles. When finished your program should behave like this:

```
Please enter the mileage for this car (miles/gallon): 20.7  
Please enter the amount of fuel (in gallons): 2.6  
The autonomy of the car is: 53.82 miles.
```

Homework Two

Problem One:

The yearly income for a fictitious profession is anywhere between \$4,000 and \$10,000. Write a program that calculates the taxes. If the income is between \$4,000 and \$6,000 the taxes are 10%, if the income is between \$6,000 and \$8,000 the taxes are 20% otherwise they're 30%. Your program asks for the income and reports the taxes due.

Examples:

```
Please enter the income: -4000
Sorry the income doesn't sound right.
```

```
Please enter the income: 2000
Sorry the income doesn't sound right.
```

```
Please enter the income: 4200
For an income of 4200.0 the taxes are 10%, that is: 420.0
```

```
Please enter the income: 6812.67
For an income of 6812.67 the taxes are 20%, that is: 1362.53
```

```
Please enter the income: 9000
For an income of 9000.0 the taxes are 30%, that is: 2700.0
```