

Lecture 8: Introduction to Computer Programming Course - CS1010

DEPARTMENT OF COMPUTER SCIENCE

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02/07/2019



Rensselaer

Announcements

- Exam 1 scheduled for February 14
- Duration: 1 hour 50 minutes
- Please try to come 10 minutes before time so that we can finish on-time.
- Closed book, closed computers exam:
 - Bring 2 A4 size hand-written sheets
 - Write your name on them and submit with your exam
- Scope: Everything from Lecture notes, Class Exercises and Homeworks (covered until today).
 - Get all the material from the Submittity website

Goals for today

- Scope and structure of the exam
- Target Problems using:
 - Decision Logic
 - Boolean Algebra
- Submit In-Class Exercise

Structure

- 5 questions to be finished in 1 hour 50 minutes
- Question 1: (20 points)
 - 10 parts: one or two words answer
 - E.g. what is the function used to typecast to floating point numbers?
 - float()
 - Check Lecture 1 slides
- Question 2: (30 points)
 - Write Python program for some computational problem (calculate something)
 - Look for specifics e.g. if the program asks you to format a message in a particular style then you must do that to get full credit.
 - Check Lecture 4 slides to review formatting

Structure

- Question 3: (10 points)
 - 5 parts: Asking for expected output of a Boolean Statement
 - E.g. what is the output of $4!=3$
 - Study from lecture 7 slides
- Question 4: (20 points)
 - 4 parts: Find errors in a given code
 - E.g. what is wrong with the following code:

```
def fun1(num1)
    print (num/2)
```

Structure

- Question 5: (20 points)
 - 2 parts:
 - Part (a) : String Operations e.g. write a string in lowercase i.e. `mystring.lower()`
 - Part (b): Output of a code that uses string operations
 - E.g. what is the output of the following code:

```
def func1(a):  
    return a[2:]  
func1('Oranges')
```

Response: anges

Check Lecture slides and code from strings.

Problem 1

- Check if an input number is a positive number, negative number or zero.
 - Use the if-elif ladder
 - Use the nested if logic

Solution (part a)

If number is greater than zero **then** print 'positive'

elif number is equal to zero **then** print 'zero'

else print 'negative'

Solution part (b)

- **If** the number is greater than or equal to zero **then**:
 - **If** number is equal to zero **then** print 'zero'
 - **else** print positive
- **else** print 'negative'

Problem 2

- We want to buy fresh apples but we have budget constraints. If the apples are fresh (represented as True in the input) then we can buy a dozen if they are more than \$5/lb and two dozen if they are less than \$5/lb. Given an input of the price of apples (\$/lb) and the quality of apples (True=fresh and False = not fresh); determine the number of apples bought.
- `def apple_buy(price, is_fresh):`

Solution

- Check if fresh or not (Boolean):
 - If yes then check price less than equal to 5:
 - If yes return two dozen
 - else return one dozen
- else return not fresh

Problem 3

Ask the user to enter a number between 1 and 20. Verify that the number is less than 20. Once verified, square the number if it is even, or multiply it by 3 if it is odd.

```
def odd_even(enter_num):
```

Test Cases:

```
odd_even(23): Invalid
```

```
odd_even(14): Even, 196
```

```
odd_even(7) :Odd, 21
```

Problem 4

- Given a day of the week encoded as 0=Sun, 1=Mon, 2=Tue, ...6=Sat, and a boolean indicating if we are on vacation, return a string of the form "7:00" indicating when the alarm clock should ring. Weekdays, the alarm should be "7:00" and on the weekend it should be "10:00". Unless we are on vacation -- then on weekdays it should be "10:00" and weekends it should be "off".
- - alarm_clock(1, False) → '7:00'
 - alarm_clock(5, True) → '10:00'
 - alarm_clock(0, False) → '10:00'

Problem 5

- You and your date are trying to get a table at a restaurant. The parameter "you" is the stylishness of your clothes, in the range 0..10, and "date" is the stylishness of your date's clothes. The result getting the table is encoded as an int value with 0=no, 1=maybe, 2=yes. If either of you is very stylish, 8 or more, then the result is 2 (yes). With the exception that if either of you has style of 2 or less, then the result is 0 (no). Otherwise the result is 1 (maybe).
- `def date_fashion(you, date):`
- **Test cases:**
- `date_fashion(5, 10) → 2`
`date_fashion(5, 2) → 0`
`date_fashion(5, 5) → 1`

In Class Exercise

Next Class

- Tuples
- Modules
- Images