CSC 108H1 F 2010 Test 1
Duration — 45 minutes
Aids allowed: none

Student Number: _____

Lab day, time, room: _____

Last Name: _____ **First Name:** _____

Lecture Section: L5101 **Instructor: Daniel Zingaro**

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*Do **not** turn this page until you have received the signal to start.*
(Please fill out the identification section above, **write your name on the back of the test**, and read the instructions below.)
Good Luck!

This midterm consists of 3 questions on 8 pages (including this one). *When you receive the signal to start, please make sure that your copy is complete.* Comments are not required except where indicated, although they may help us mark your answers. They may also get you part marks if you can't figure out how to write the code.
If you use any space for rough work, indicate clearly what you want marked.

1: _____/ 6
2: _____/ 6
3: _____/ 8

TOTAL: _____/20

1a: 1b: 1c: 1d:

Question 1. [6 MARKS]

Each of these subquestions contains a block of code. Treat each block of code independently (code in one question is not related to code in another), and fill in the blanks for each question.

Part (a) [1 MARK] Order of Execution

```
var_A = 11
var_B = var_A
var_A = 42
```

After this code is executed, the value of `var_B` is _____.

Part (b) [3 MARKS] Conditionals and Booleans

The table to the right shows how an employee's age and experience affects his or her hourly wage. Assume that you have an `int` variable `experience` and an `int` variable `age` that correspond with the labels in the table. Fill in the boolean conditions in the code below to calculate the hourly wage for the employee.

	Experience		
Age	0	1-2	3+
under 18	$6.50	$9.50	$11.00
18 and over	$6.50	$12.00	$12.00

```
if ____________________________________________________________:
    wage = 6.5

elif ____________________________________________________________:

    if ____________________________________________________________:
        wage = 9.5
    else:
        wage = 11
else:
    wage = 12
```

Part (c) [1 MARK] Data Types

Fill in the blank so that when this code is run, the user is asked to enter two numbers and then the sum of those numbers is printed. The user input may contain decimal values (e.g., `35000.75`).

```
num1 = raw_input("Please enter your salary: ")
num2 = raw_input("Please enter your end of year bonus: ")

print "Your total earnings is" , ______________________________________
```

Part (d) [1 MARK] Calling Functions

Fill in the blank to call `city_population` to obtain the population of Monkton in 1992.

```
def city_population(city, year):
    '''Return the population of str city in int year.'''
    # The code for this function is not shown.
    return population

print "In 1992, the population of Monkton was" , ____________________________________
```

Part (e) [0 MARK] The Truth

Who is the most captivating of this semester's three CSC108 instructors?

- A. Dan
- B. Dan
- C. Dan

Question 2. [6 MARKS]

Write the following function according to its docstring description.

```
def min_red (p):
  '''p is a Picture object. Return the minimum red value
  of all of the pixels of p. For example, if p has three pixels
  whose red components are 100, 40, and 50, return 40.
  p is guaranteed to have at least one pixel.'''
```

Question 3. [8 MARKS]

In a certain dice game, a person's turn involves rolling two dice at a time, until:

- one of the dice shows a 6, or
- both dice show the same number

For example, here is a possible person's turn. (As above, there are two ways for a person's turn to end. Make sure you understand the other one, too.)

```
3 4
4 5
2 1
3 6
```

Write the following function so that it continues to roll two dice and print their values, until the person's turn is over. You'll want to generate a random number between 1 and 6 for each roll; you can use `random.randint (1, 6)` to do so. Note that each line of output should consist of two integers separated by a space, as in the sample given above.

```
def take_turn ():
  '''Print pairs of dice rolls until the turn is over.'''
```

[Use the space below for rough work. This page will not be marked, unless you clearly indicate the part of your work that you want us to mark.]

Short Python function/method descriptions:

```
__builtins__:
  abs(number) -> number
    Return the absolute value of the given number.
  max(a, b, c, ...) -> value
    With two or more arguments, return the largest argument.
  min(a, b, c, ...) -> value
    With two or more arguments, return the smallest argument.
  raw_input([prompt]) -> string
    Read a string from standard input.  The trailing newline is stripped.  The prompt string,
    if given, is printed without a trailing newline before reading.
int:
  int(x) -> integer
    Convert a string or number to an integer, if possible.  A floating point argument
    will be truncated towards zero.
media:
  choose_file() --> str
    Prompt user to pick a file. Return the path to that file.
  create_picture(int, int) --> Picture
    Given a width and a height, return a Picture with that width and height.  All pixels are white.
  get_blue(Pixel) --> int
    Return the blue value of the given Pixel.
  get_color(Pixel) --> Color
    Return the Color object with the given Pixel's RGB values.
  get_green(Pixel) --> int
    Return the green value of the given Pixel.
  get_pixel(Picture, int, int) --> Pixel
    Given x and y coordinates, return the Pixel at (x, y) in the given Picture.
  get_red(Pixel) --> int
    Return the red value of the given Pixel.
  load_picture(str) --> Picture
    Return a Picture object from file with the given filename.
  set_blue(Pixel, int)
    Set the blue value of the given Pixel to the given int value.
  set_color(Pixel, Color)
    Set the RGB values of the given Pixel to those of the given Color.
  set_green(Pixel, int)
      Set the green value of the given Pixel to the given int value.
  set_red(Pixel, int)
    Set the red value of the given Pixel to the given int value.
  show(Picture)
    Display the given Picture.
  Color:
    black
      RGB: 0, 0, 0
    honeydew
      RGB: 240, 255, 240
    peachpuff
      RGB: 255, 218, 185
    white
      RGB: 255, 255, 255
```

Last Name: _____ **First Name:** _____