Question 1.  [6 marks]

Part (a)  [1 mark] What is the output of the following program?

```python
num = 84
if num >= 80:
    print 'A'
if num >= 20:
    print 'B'
else:
    print 'C'
```

Solution:

A
B

Part (b)  [1 mark] What does this program print? (Assume that `absent.wav` exists.)

```python
snd1 = sound.load_sound ('absent.wav')
snd2 = sound.load_sound ('absent.wav')
print id(snd1) == id(snd2)
```

Solution:

False

Part (c)  [1 mark] Assume that `s` refers to a string with at least two characters. Write an expression that evaluates to the last two characters in `s`.

Solution:

`s[-2:]`

Part (d)  [1 mark] Fill-in the missing expression so that the while-loop never executes.

```python
response = ________________________________
while response == 'a' or response == 'b':
    response = raw_input ('Type something: ')
```

Solution:

```python
response = 'c'  # many answers
```
Part (e) [1 mark] What is the output of the following program?

```python
def blah(x):
    x = 1982

x = 2
blah(x)
print x
```

Solution:

2

Part (f) [1 mark] Briefly explain the difference between a function definition and a function call.

Solution: A function definition tells Python what a function does: it specifies the function’s name, the parameters, and the body. A function call runs the function’s code using specific values for the parameters.

Question 2. [7 marks]

This question asks you to write a program in two steps. First, you’ll write a function that determines whether each sample in a sound has a left value equal to its right value. Then, you’ll write a main block that calls this function based on user inputs. Assume that `sound` has already been imported.

Part (a) [4 marks]

On the next page, write the function according to its docstring. As an example, if you call `all_equal` with a sound whose three samples are (10, 10), (40, 40), and (-523, -523), then `True` should be returned. As a second example, if you call `all_equal` with a sound whose two samples are (5, 6) and (40, 40), then `False` should be returned.

```python
def all_equal (snd):
    '''Return True if all samples in Sound snd have their left channel value equal to their right channel value. Return False otherwise.'''
```
Part (b) [3 marks]

Complete the main block below. Your program should first use `raw_input` to ask the user for the name of a wav file; use the prompt `Enter filename:`. Then, your program should output one of the following two strings, depending on the output of `all_equal`:

- If `all_equal` returns `True`, output `Sound is mono`
- If `all_equal` returns `False`, output `Sound is not mono`

```python
if __name__ == '__main__':
    Solution:

    def all_equal (snd):
        '''Return True if all samples in Sound snd
        have their left channel value equal to their right channel value.
        Return False otherwise.
        
        for samp in snd:
            if sound.get_left(samp) != sound.get_right(samp):
                return False
        return True

    if __name__ == '__main__':
        fname = raw_input ('Enter filename: ')  
        snd = sound.load_sound (fname)  
        res = all_equal (res)  
        if res:
            print 'Sound is mono'
        else:
            print 'Sound is not mono'
```

Marking Scheme:

For part A:
+1 for the for-loop
+2 for an 'if' with a 'return False'
+1 for 'return True' at the end

For part B:
+1 for the `raw_input`
+0.5 for loading the sound
+0.5 for calling the function
+1 for the 'if' and associated output messages
Question 3. [5 marks]

Write the following function according to its docstring. You must use a while-loop in your solution (if you don’t, no absent.wav for you!). Use the prompt Enter a string: when prompting for a string.

For example, if I call the function as follows:

prefixed_strings(3, 'wh')

and then type the following three lines:

knock knock!
who’s there?
no one. people don’t visit anymore. they Skype! how didn’t you know that?

the function would return 1 (because only one string starts with wh).

```python
def prefixed_strings (num, prefix):
    '''num is a positive int; prefix is a string.
    Prompt the user for a total of num strings,
    and return the number of those strings that start with prefix.'''
    good = 0
    counter = 0
    while counter < num:
        s = raw_input ('Enter a string: ')
        if s.startswith (prefix):
            good += 1
        counter += 1
    return good
```

Marking Scheme:

+1 for initializing two counters
+1 for the correct while guard
+0.5 for the raw_input
+1 for the correct 'startswith'
+1 for incrementing the good counter
+0.5 for returning the good counter