CS2321 Lab 7

Lab Instructions:
Save the code you write for each exercise in this lab as a *library* -- that is, a textfile with a .py extension containing only executable python code (i.e. no angle-bracket prompts, etc). Name each file according to the exercise number (e.g. ex1.py, ex2.py, etc.) and save them to a directory containing the report file (in PDF), when completed, compress them together in a single zip file to be submitted on D2L.

Each function should have a docstring explaining what the function does.
Any Follow-up Questions and their Answers should be included in a **docstring** following the `main()` function.

e.g. the structure for a Python module should look like:

```
'''
   modulename.py
   Doc-string explaining what this module does
'''
# imports, such as math, random, etc., as needed

# Your code, includes definitions of classes, functions, etc.
def ...
def ...
.
.
.
def main():
   # Do what is needed.


if __name__ == "__main__":
      main()

'''
   Doc-string answering follow up questions
'''
```

Lab Deliverable: Once all your programs run correctly, collect their code and the results of their test-cases in a nicely-formatted **PDF** file exported from Word Processing document (e.g. MS Word or LibreOffice) to be included in the submission on D2L.

This **report** should consist of each lab exercise, clearly **labeled** in order, consisting of code, then copy/pasted text output, or, for GUI, screen-captured, of its four test-cases.
In this lab, take series of screen captures of your GUIs and insert them into the report.

Paired Programming:
We will work today's lab assignments in pairs -- on a single computer in one partner's account.
One person will start out as the *typist*, the other as the *verifier*. These roles will switch.
For each problem, partners should decide upon their proposed algorithm to solve the given problem *before* the typist begins to type. Sketch it out on a sheet of paper, perhaps.
For **ten** minute periods, the typist will type the code, while the other verifies and suggests corrections (typist has final decision). Under no circumstances may the verifier ever touch the mouse or keyboard. (Note: the *instructor* may not touch your input devices either!)
On the instructor's ten-minute signal, or your own timer, partners will trade responsibilities. This should allow both partners to benefit from each other's strengths. Future paired-programming labs will be with different partners, to spread the gained experience around.
Each partner should post the resulting code in their own D2L folder. You may transmit partnership-generated code to the other partner (only!) by email or thumb-drive.

Exercise

1. Test listing 3.6 (Numeric Base Conversion)
   Convert four decimal integers (15, 30, 267, 32344) to the following bases:
   a. Base3
   b. Base7
   c. Base16
2. From page 145 # 11
   a. Hint: type your simple HTML file in separate files and use f = open(...) in your program to open it and then read it in as a string
   b. Also, make sure you test some HTML files that return FALSE (i.e. imperfectly-formatted HTML)
   c. You need only use simple lower case single-word tags in your example files (e.g. **<html><b><h1>** etc. vs: **<a href="...">**)
   d. Show the text of the file as well as the function's response!
   e. Hint, use the regular expression library to match the tag pattern:

```
import re
pattern = re.compile('</?[a-z]*[0-9]*>')
tags = re.findall(pattern, "<html><head>Example</head></html>")
```