CMPT 120-D400 Mini Midterm Exam 1
Fall 2022

This is a **30 minute closed book exam**: notes, books, computers, calculators, electronic devices, etc. are **not** permitted. Do not speak to any other students during their exam or look at their work. Please remain seated and **raise your hand** if you have a question.

1/3 the size!
3/5 the fun!

Security Codes

a) (5 marks) Write a function call `rand_digit()` that returns, as a string, a random digit (0 to 9). Import any modules required to make it work.

Make this function reasonably efficient: it shouldn't do any unnecessary work.

```
>>> rand_digit()
'4'
>>> rand_digit()
'0'
>>> rand_digit()
'4'
>>> rand_digit()
'7'
```

b) (7 marks) Write a function called `rand_digits(n)` that returns a string of `n` randomly chosen digits. Use `rand_digit()` from the previous question to help write this function. You must use a **loop** and the **accumulation pattern** in your answer.

If `n` is 0, or less, then return the empty string.

Make this function reasonably efficient: it shouldn't do any unnecessary work.

```
>>> rand_digits(3)
'824'
>>> rand_digits(10)
'3487725783'
>>> rand_digits(-2)
''
```

c) (5 marks) Write a function called `security_code(style)` that returns a *string* according to these rules:

- If `style` is `'short'`, a string of 5 randomly chosen digits is returned.
- If `style` is `'long'`, a string of the form '*dddd-dddddd*', where each *d* is a randomly chosen digit. In other words, the returned string consists of 4 random digits, followed by a `'-'`, and then 6 more random digits.
- If `style` is anything other than `'short'` or `'long'`, return the string `'error'`.

Use `rand_digits` from the previous question to help write this function.

Make this function reasonably efficient: it shouldn't do any unnecessary work.

```
>>> security_code('short')
'32461'
>>> security_code('short')
'40103'
>>> security_code('long')
'4965-106233'
>>> security_code('long')
'0581-327653'
>>> security_code('medium')
'error'
```

Multiple Choice

For each of the following questions, fill in **the one best answer** on the answer sheet.

Every correct answer is worth 1 mark. Incorrect answers, unanswered questions, questions with more than one answer, or questions with illegible answers, are worth 0.

1) Consider these two statements:

   i) Python is popular language for data science and machine learning.
   ii) Python has a reputation for making extremely fast-running programs.

   Which one of these statements most accurately describes the truth values of i) and ii)?

   A. i) and ii) are both true
   B. i) and ii) are both false
   C. i) is false and ii) is true
   D. i) is true and ii) is false

2) Consider these two statements:

   i) A Python variable name can start with a digit.
   ii) A Python variable name can contain a period character.

   Which one of these statements most accurately describes the truth values of i) and ii)?

   A. i) and ii) are both true
   B. i) and ii) are both false
   C. i) is false and ii) is true
   D. i) is true and ii) is false

```
i = 0             # line 1
while i < 100:    # line 2
    print(i)      # line 3
    i += 1        # line 4
```
Program Listing 1

3) This question is about **Program Listing 1**.

What is the *last* number printed?

A. 98
B. 99
C. 100
D. 101
E. some other number

4) This question is about **Program Listing 1**.

Suppose line 3 and line 4 are swapped. What is the *last* number printed?

A. 98
B. 99
C. 100
D. 101
E. some other number

5) This question is about **Program Listing 1**.

The program would print the same output if "i = 0" in line 1 was replaced with "i=0" (i.e. spaces are removed).

A. True
B. False

6) This question is about **Program Listing 1**.

In line 1, it's possible to initialize i with some int value so that the loop runs forever.

A. True
B. False