CPSC 217 Final Exam Review

Chris Luce

Questions are from prior exams by John Aycock

Data Representation, Number Conversion, and Bases

The maximum positive value that can be represented in a 16-bit signed integer is

(A) 16

(B) 32767

(C) 32768

(D) 65535

(E) 65536

(B) 32767

The number of values that can be represented in 32 bits is

(A) 32

(B) 2^{32}

(C) $2^{32} - 1$

(D) 2^{-32}

(E) 2^{32-1}

(B) 2^{32}

Binary is another name for base

(A) 2

(B) 4

(C) 6

(D) 8

(A) 2

To represent five distinct values, you need at least this many bits:

(A) 1

(B) 2

(C) 3

(D) 5

(E) 8

(C) 3

$2^2 = 4$

$2^3 = 6$, Therefore we need at least 3 bits

Any ASCII character can be represented in how many bytes:

(A) 1

(B) 2

(C) 3

(D) 4

(B) 2

In base two, what number comes after 010101 (i.e., is one greater than 010101)?

(A) 010110

(B) 110101

(C) 010111

(D) 101010

(A)010110

12 is a base nine number. What is it in octal?

(A) 11

(B) 12

(C) 13

(D) 14

Convert to decimal first:

$12_9 = (1 \times 9^1) + (2 \times 9^0)$

$= (9) + (2)$

$= 11$

Convert to octal:

$11_{10} / 8 = 1$ R 3

$1 \quad /8 = 0$ R 1

Read remainder from bottom up

$12_9 = 13_8 \rightarrow$ (B)

123 is a hexadecimal number. What is it in base 16?

(A) 123

(B) 7B

(C) 173

(D) 291

(A) 123

71 is a base ten number. In base four it is

(A) 113

(B) 311

(C) 1013

(D) 3101

Convert to base 4:

71_{10} / 4 = 17 R 3

17 / 4 = 4 R 1

4 / 4 = 1 R 0

1 / 4 = 0 R 1

Read remainder from bottom up

$71_{10} = 1013_4$ → (C)

Unix

Assume that a directory contains the following files:

bob.py

readme.txt

xy

foo

blarg

Which filenames would the wildcard *.txt select?

(A) bob.py readme.txt xy foo blarg

(B) bob.py readme.txt blarg

(C) bob.py readme.txt foo blarg

(D) readme.txt

(E) None of them

(D) readme.txt

Which filenames would the wildcard b* select?

(A) bob.py readme.txt xy foo blarg

(B) bob.py blarg

(C) bob.py readme.txt foo blarg

(D) readme.txt

(E) None of them

(B) bob.py blarg

Python

What does this code do?

```
s = raw_input()
s = raw_input()
s = raw_input()
s = raw_input()
print s
```

(A) Prints the first line
(B) Prints the last line
(C) Nothing – Python reports a syntax error
(D) Nothing – Python reports an EOFError

(B) Prints the last line

Does this code do the same thing as the code in the last question?

```
i = 0
while i < 5:
    s = raw_input()
    i = i + 1
print s
```

(A) Yes

(B) No

(A) Yes

What does this code print?

```
s = 'abcde'
t = ''
for ch in s:
    t = t + ch
print t
```

(A) a
(B) abcde
(C) edcba
(D) Nothing – Python reports a syntax error
(E) Nothing – Python reports a run-time error

(B) abcde

```
i = 0
while i < 5:
    raw_input()
    i = i + 1
# now output
while i < 15:
    print i
    i = i + 1
```

(A) 0
(B) 5
(C) 10
(D) 15
(E) 20

(D) 15

What does print 2 + 3 * 5 print?

(A) 10

(B) 17

(C) 25

(D) 30

(B) 17 → follow BEDMAS

What does print 2 + (3 * 5) print?

(A) 10

(B) 17

(C) 25

(D) 30

(B) 17 → follow BEDMAS

What does print (2 + 3) * 5 print?

(A) 10

(B) 17

(C) 25

(D) 30

(C) 25 → follow BEDMAS

What type is x, after the statement x = 12.5 + 17 is executed?

(A) int

(B) float

(C) long

(D) None of the above – Python reports a syntax error

(E) None of the above – Python reports a run-time error

(B) float

What does this code print?

```
s = 'abcde'
t = ''
for ch in s:
    t = ch + t
print t
```

(A) a
(B) abcde
(C) edcba
(D) Nothing – Python reports a syntax error
(E) Nothing – Python reports a run-time error

(C) edcba → prints backwards

Use the definition of L below to answer the next few questions in this section.

L = [1, 2, 3, 4]

What is len(L)?

(A) 0

(B) 1

(C) 3

(D) 4

(E) 5

(D) 4

What is L[2]?

(A) 1

(B) 2

(C) 3

(D) 4

(E) A run-time error

(C) 3

What is L[-1]?

(A) 1

(B) 2

(C) 3

(D) 4

(E) A run-time error

(D) 4

What is L[2:3]?

(A) [2]

(B) [3]

(C) [2, 3]

(D) [3, 4]

(E) A run-time error

(B) [3]

What is L[:2]?

(A) [2]

(B) [3]

(C) [1, 2]

(D) [1, 2, 3]

(E) A run-time error

(C) [1, 2]

After L.append(3), what is L?

(A) [1, 2, 3, 4]

(B) [1, 2, 3, 4, 3]

(C) [3]

(D) [3, 1, 2, 3, 4]

(B) [1, 2, 3, 4, 3]

Use the definition of D below to answer the questions in this section.

D = { 1: 2, 3: 4, 5: 3 }

What is len(D)?

(A) 0

(B) 1

(C) 3

(D) 4

(E) 6

(C) 3

What is D[3]?

(A) 1

(B) 2

(C) 3

(D) 4

(E) 5

(D) 4

What does this code print?

```
i = 1
j = 0
while j < 3:
    print D[i]
    j = j + 1
    i = i + 4
    i = i % 6
```

(A) 2, 4, 3
(B) 1, 3, 5
(C) 2, 3, 4
(D) 5, 3, 1
(E) 4, 3, 2

(C) 2, 3, 4