CS100 Tutorial 1 (fall semester 2018)

1. Read the following C program and answer the questions below it.

```
#include <stdio.h>
int main() {
   printf("%c ", 'A');
   printf("%c ", 65);
   printf("%c ", 0x41);
   printf("%c ", 0101);
   return 0;
}
```

(a) What will the above program output? (Look up an ASCII table.)
(b) What will happen if the conversion specifier of the second printf is changed to **%d**?
(c) What will be the result if **0x** in the third printf is removed?
(d) What if the first **0** in the fourth printf is deleted?

2. Given the following declarations and initial assignments:

```
int i, j, m, n;
float f, g;
i = j = 2;
m = n = 5;
f = 1.2;
g = 3.4;
```

evaluate the following expressions independently (i.e. all variables start with the same set of initial values given above). Show any conversions that take place and the data type of result.

(a) m * j / j
(b) m / j * j
(c) (f + 10) * 20
(d) (i++) * n
(e) i++ * n
(f) m = n = --j;
(g) (int) g * 10
(h) (int) (g * 10)
(i) j = i + f

3. Write a C program that reads in several lines of non-negative integer numbers, computes the average for each line and prints out that average. A sample input and output session is given below (the italic and underscored numbers are users' input):

```
Enter the number of input lines: 2
Enter input line 1: 2 4 6 8 -1
Average: 5.000000
Enter input line 2: 2 6 -1
Average: 4.000000
<Program terminates>
```

The value −1 in each line of user's input is used to indicate the end of input for that line and it is not counted in the average.

4. Write a C program that allow user to interact with the computer to guess whether the next card is higher or lower (called HiLo game). In this game, the first card will be opened first. Then, the user is required to guess the next four cards. If the user guesses all correctly, then he/she will win the game. Otherwise, he/she will lose the game.

A sample input and output session is given below (where the user's input is in red):

```
The first card (between 1 and 13): 11
Guess Higher (H) or Lower (L)
L
The next card (between 1 and 13): 4
Guess Higher (H) or Lower (L)
H
The next card (between 1 and 13): 11
Guess Higher (H) or Lower (L)
L
The next card (between 1 and 13): 8
Guess Higher (H) or Lower (L)
H
The next card (between 1 and 13): 5
You lose
```