**CPSC 1020 FALL 2017**

**EXAM #1**

**This is a Closed Book exam. Please keep your notes and your computers closed. You have 50 minutes to complete the Exam. There is a total of 76 points. Although the points total 76 your grade will reflect 100%. EX. A total score of 76 will result in 100%, a total score of 50 will result in an 66%.**

**Question 1: ( 6 points)**

The following program is one of the programs you completed on the pre-test. Rewrite this program to use command line arguments as the source for the name rather than asking for user input. EX. Assuming your program compiles with no error and no warnings. To execute the program, I would type the following:

**./a.out Yvon Feaster**

The program would then output the following:

Rewrite the program here:

**My name is Yvon Feaster.**

#include <stdio.h>

int main()

{

char first[50];

char last[50];

printf("Please enter your first name: ");

scanf("%s", first);

printf("Please enter your last name: ");

scanf("%s", last);

printf("My name is: %s %s\n", first, last);

return 0;

}

**Question 2: (6 points):**

In class I discussed several reasons you would want to use pointers. **In no more than 2 sentences each, describe 2 of these reasons.**

1.

2.

**Question 3 (3 points)**

Multiple choice:

Consider the following code:

#include <stdio.h>

 int main()

{

         int i;

        char \*text\_pointer = "Good morning!";

        printf(" %c",text\_pointer[3]);

        return 0;

}

What is the output?

1. o
2. d
3. goo
4. None of the above

**Question 4 (3 points)**

Multiple choice

Given the following declarations and initialization.

int x = 3;

int y = 6;

int \*ptr1 = &x;

int \*ptr2 = &y;

What is the output of the following program fragment

printf("%d %d - %d %d", x, \*ptr1, y, \*ptr2);

1. 3 3 - 6 6
2. 3 &x - 6 &y
3. 6 6 - 3 3
4. None of the above

**Question 5 (3 points)**

Multiple choice:

Given the following declarations and initialization.

int x = 3;

int y = 6;

int \*ptr1 = &x;

int \*ptr2 = &y;

ptr2 = ptr1;

What is the output of the following program fragment

printf("%d %d - %d %d", x ,\*ptr1, y, \*ptr2);

1. 6 6 – 6 6
2. 3 3 – 3 3
3. 3 3 – 6 3
4. 3 6 – 3 3

**Question 6 (3 points)**

Multple choice:

Given the following declarations and initialization.

int x = 3;

int y = 6;

int \*ptr1 = &x;

int \*ptr2 = &y;

\*ptr1 = \*ptr2;

What is the output of the following program fragment

printf("%d %d - %d %d", x ,\*ptr1, y, \*ptr2);

1. 6 6 - 6 6
2. 3 3 - 3 3
3. 3 3 - 6 3
4. 3 6 - 3 3

**Question 7 (10 points)**

Consider the following struct:

typedef Pixel{

unsigned char red;

unsigned char green;

unsigned char blue;

}

Using one of the two methods discussed in class, write the code to dynamically allocate memory for a 2D array of **Pixels** of size **width** and **height.** You can assume width and height have been declared and initialized.

Hint: Remember a Pixel is just a data type similar to the Circles struct from your lab.

**Question 8 (9 Points)**

**What is the output of the following program?**

#include <stdio.h>

OUTPUT:

int main(){

int num1 = 5;

int num2 = 10;

int \*ptr = &num1;

int array[10] = {1,3,2,3,8,2,6,-1,0,9};

num2 += \*ptr;

printf("%d\n", num2);

num2 += \*ptr + 3;

printf("%d\n", num2);

printf("%d\n", \*ptr);

ptr = array;

printf("%d\n",\*ptr);

printf("%d\n", array[0] + 3);

printf("%d\n", \*(ptr + 3));

printf("%d\n", \*ptr);

ptr += 1;

printf("%d\n", \*ptr);

ptr += 5;

printf("%d\n", \*ptr);

return 0;

}

**Question 9 (3 points)**

What is the output of the following code.

#include <stdio.h>

Output:

int f(int , int \*, int \*\*);

int main()

{

int c, \*b, \*\*a;

c = 5;

b = &c;

a = &b;

printf("%d \n", f(c, b, a));

return 0;

}

int f(int x, int \*py, int \*\*ppz)

{

int y, z;

\*\*ppz += 1;

z = \*\*ppz;

\*py += 6;

y = \*py;

x += 1;

return x + y + z;

}

**Question 10 ( 16 total points)**

Consider the following code.

Of the lines of code numbered 1-8 which are legal (will not cause a warning, compile or runtime error). Put a T (true) by the ones that are correct and an F (false) by the one that will cause an error or warning. (run-time or compile-time)

#include <stdio.h>

int main (){

int var = 30;

int var2 = 15;

int \*ptr;

int \*\*pptr;

1. ptr = &var2; \_\_\_\_\_\_

2. pptr = &ptr; \_\_\_\_\_\_

3. ptr = var; \_\_\_\_\_\_\_

4. pptr = \*var2; \_\_\_\_\_

5. \*pptr = &var; \_\_\_\_\_ You can assume that pptr is pointing to an appropriate type of data

6. \*ptr = pptr; \_\_\_\_\_\_

7. printf("%d", \*\*ptr); \_\_\_\_\_\_

8. printf("%d", \*\*pptr); \_\_\_\_\_

return 0;

}

**Question 11 (15 points)**

Write a program that will:

1. Create a file pointer and call the function to open a file that will be **written** to. The file to be opened will be provided through command line arguments. You can assume the following is the appropriate way to execute the program:

./a.out output.txt

1. You should also verify the file opened correctly. If the file does not open print an error message. Then return.
2. Write the following message to the opened file.

**Hello World!!!**

1. Make sure you close the file when finished.
2. This should be a complete program. You will need to include any files necessary. You will need a main, etc.