Homework 1, CpSc 2120-2 Spring 2021, Total 24 points

Name: ___________________________________________ (Print Legibly)

Q1 (5 x 2 = 10 points)

(A) What is the content of the variable y after execution of the following code?

```
int x[] = { 1, 4, 8, 5, 1, 4 };  
int *ptr, y;  
ptr = x + 4;  
y = ptr - x;
```

(a) -3   (b) 0   (c) 4   (d) 4 + sizeof(int)   (e) 4*sizeof(int)

(B) What will be printed when the sample code below is executed?

```
int x = 0;  
for (x=1; x<4; x++);  
printf("x=%d\n", x);
```

(a) x=4   (b) x=0   (c) x=3   (d) x=3   (e) x=5

(C) What will be printed when the sample code below is executed?

```
char *ptr;  
char myString[] = "abcdefg";  
ptr = myString;  
ptr =ptr+5; printf ("%s", ptr);
```

(a) efg   (b) cdefg   (c) fg   (d) defg   (e) none of those

(D) What will happen when the following program is compiled and executed?

```
#include <stdio.h>  
int i;  
void increment( int i )  
{  i++;  }  
int main() {  
    for( i = 0; i < 10; increment( i ) )  
    {  
    }  
    printf("i=%d\n", i);  
    return 0;  }
```

(a) It will not compile (b) it will print i=11   (c) it will print i=9 (d) it will print i=10 (e) it will loop indefinitely

(E) Consider the program:

```
cchar str[] = “The cat sat on the mat”;
cchar *p = str + 7;  
printf (“%s\n”, p);
```

What would this program print?
Q2 (7 x 2 = 14 points): Consider the following simple program. The program reads several integers from the stdin and outputs one line on stdout. Fill up the following table.

```c
#include <stdio.h>
#include <stdlib.h>

int main (){
    int c=0, num, myst=0, d; int *ptr;
    scanf("%d",&num);
    ptr = (int *)malloc(num*num*sizeof(int));
    while (c<num*num)
    {
        scanf("%d",&ptr[c]);
        c++;
    }
    c = 0;
    while (c <num*num)
    {
        myst = myst+*(ptr+c);
        c=c+num+1;
    }
    c=0;
    while (c <num )
    {
        d = (c)*num -c+ num-1;
        myst = myst + *(ptr +d);
        c++;
    }
    printf("\t%d\n", myst);
    return 0;}
```

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 1 2 3 4</td>
<td></td>
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<tr>
<td>2 4 3 1 2</td>
<td></td>
</tr>
<tr>
<td>3 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>3 9 8 7 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>4 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16</td>
<td></td>
</tr>
<tr>
<td>3 7 8 9 6 5 4 3 2 1</td>
<td></td>
</tr>
<tr>
<td>3 9 5 4 1 2 3 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>