Homework 1, CpSc 3120 Fall 2022

Name: _____ (Print Legibly)

Question 1 (5× 2 =10 points): Mark the correct answer to each question.

(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) What would this program print?

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

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Q2 (7 × 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.

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```
#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;}
```

Input	**Output**
2 1 2 3 4	
2 4 3 1 2	
3 1 2 3 4 5 6 7 8 9	
3 9 8 7 6 5 4 3 2 1	
4 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	
3 7 8 9 6 5 4 3 2 1	
3 9 5 4 1 2 3 3 4 5	

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Question 3 (8 points):

a) What is the output of the following program? Circle one.
int a = 35, b=50; int *p1=&a, *p2 =&b;
p1=p2; printf("%d %d\n", *p1, *p2); printf(("%d %d\n", a, b);

(1) 35 50 (2) 50 50 (3) 35 50 (4) 50 50
35 50 35 50 50 50 50 50

b) Consider the following program segment; what is the output? Circle one.
void fun(int *a, int b){int c; a=a+100; c=b; b=999;}
int d=10, e =20; fun(&d, e); printf ("%d %d\n", d, e);

(1) 10 20 (2) 110 20 (3) 110 999 (4) none of those.

c) What values will be printed by the following program segment?

int proc (int x){x+= 2; return x};
int x= 8; int y = proc(x); printf ("%d %d\n", x, y);

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;  }
```

(1) It will not compile (2) it will print i=11 (3) it will print i=9 (4) it will print i=10 (5) it will loop indefinitely

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