

Homework 1, CpSc 3120 Spring 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);
```

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.

Consider the following simple program. The program reads several integers from the stdin and outputs one line on stdout. Fill up the following table.

```
#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	

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