SWE20004 - Lab 8

(Submit Task 8.5 and Task 8.6 as part of assignment 3)

Task 8. 1. Give the values of the variables after these statements are executed:

a).

```
int a=1, b=2, *ptr=&b;
...
a = *ptr;
```

b).

```
int a=1, b=2, c=5, *ptr=&c;
...
b = *ptr;
*ptr = a;
```

c).

```
int a=1, b=2, c=5, *ptr;
...
ptr = &c;
c = b;
a = *ptr;
```

d).

```
double x=15.6, y=10.2, *ptr_1=&y, *ptr_2=&x;
...
*ptr_1 = *ptr_2 + x;
```

e).

```
int w=10, x=2, *ptr_2=&x;
...
*ptr_2 -= w;
```

Task 8.2 Show the contents of the variables that have changed after executing each of the following codes, here **m** is name of an array.

```
int i = 10,*p1,*p3;
int m[]={2,4,8,9,12,32,78,54,98};

a) p1 = &i;
   *p1 = 8;

b) p1 = &m[0];
    p1 = p1 + 2;
   *p1 = *p1 + 8;

c) p1 = &i;
   p3 = m;
   *(p3 + 1) = *p3 + *p1;

d) p1 = m + 2;
   p3 = p1 + 1;
   i = *p1 + *p3;
```

Task 8.3 Assume that an array **m** is defined with the following statement:

```
int m[]={10,2,4,5,2,1,20,34};
int *ptr1=&m[0], *ptr2=&m[2];
```

Give the value of the following references:

```
1. *m
2. *(m+1)
3. *m+5
4. *(m+5)
5. *ptr1
6. *ptr2
7. *(ptr1+1)
8. *(ptr2+3)
```

Task 8.4 Assume that an integer array **m** is defined by the following statements:

```
int m[2][5]={{1,8,7,6,10},{2,4,-1,0,5}}, *p=&m[0][0];
```

Draw a memory allocation **diagram**, and give the value indicated by each of the following references:

```
1. *p
2. *(p+2)
3. *p + 2
4. *(p+1) + *(p+5)
```

Task 8.5. Write a program for reading information **from a data file** and saving a summary report into another data file for the average value, the maximum value, and the minimum value. A data file named 'price.dat' that contains the price of different items, the first record in the price data file contains an integer that specifies the number of records that follow. Each of the following lines contains an **id** and the corresponding **price**. (Need to submit with assignment 3)

```
10
1       1000.25
2       55.25
3       9999.99
4       33.45
5       2000.00
6       1588.88
7       1699.99
8       14898.25
9       13734.21
10      13523.24
```

The output of the problems should be saved into another data file, named 'Output.dat'. With the following data:

Number of price readings: 10
Maximum price: 14898.30
Minimum price: 33.45
Average price: 5853.35

Task 8.6. Write a function that reorders the values in three integer variables such that the values are in ascending order. Assume that the following function prototype is used. (Need to submit with assignment 3)

```
void reorder(int *a,int *b,int *c);
```

where a, b, and c are pointers to the three variables. Write a main function to test the `reorder` function.