CSE122 Computer Programming

Sheet 9: Pointers

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1. Write down and discuss the expected output of following program, assuming X and P are located at addresses (0x1024, 0x1128).

```
int X = 3;
int* P = &X;
cout<<*P<<'\t'<<P<<'\t'<<&X<<'\t'<<&P;
```

2. Write down and discuss the expected output of following program, assuming M and P are located at addresses (0x1024, 0x1128).

```
int M[] = {3,4,5,2};
int* P;
P = M;
cout<<*P<<'\t'<<*(P+1)<<'\t'<<P[2]<<'\t'<<*(M+3)<<endl;
P = M;
cout<<P<<'\t'<<(P+1)<<'\t'<<&P[2]<<'\t'<<(M+3)<<endl;
P = &M[1];
cout<<*P<<'\t'<<(P-M)<<'\t'<<(int)P-(int)M<<endl;
```

3. Discuss the expected output of following program.

```
#include <stdio.h>
#include <conio.h>
void F1(int* A, int* B, int* C)
{
    int D;
    D = *A;
    *A = *B;
    *B = *C;
    *C = D;
}
```

```
void main()
{
    int X = 7, Y = 8, Z = 2;
    cout<<X<<'\t'<<Y<<'\t'<<Z<<endl;
    F1(&X,&Y,&Z);
    cout<<X<<'\t'<<Y<<'\t'<<Z<<endl;
}
```

4. Discuss the expected output of following program.

```
float F[] = {1.2, 3.4, 7.1, 3.1};
float* P = F;
cout<<*P<<'\t'<<endl;
P++;
cout<<*P<<'\t'<<endl;
P+=2;
cout<<*P<<'\t'<<endl;
```

5. Write a function that takes a string consists of several numbers separated by a space character and convert it into an array of double values. Consider the following program:

```
int GetValues(char* Text, double* Values)
{
    int nValues = 0;
    ...
    return nValues;
}
void main()
{
    char Text[] = "7672.28 276763.22 0.767 1.2878 772.2 1878 152 0.0123";
    double Values[100];
    int nValues;
    nValues = GetValues(Text, Values);
    for(int i=0;i<nValues;i++)
        cout<<Values[i]<<endl;
}
```

Hint: use “strtok” function to divide the given string into pieces.

6. Answer Q5 without using “strtok” function.
7. Write a program to implement a dynamic 1D array.
8. Write a program to implement a dynamic 2D array.
9. Write a program sort a list of names using pointers.
