Homework 2 Due:24/04/2023

Q1 A static memory is given in order to optimize the memory usage of the code. The static memory needs to be used for multiple complex numbers.

- Use a `#define` statement named `MAX` for the amount of storable complex numbers.
- `float mem[]` represents the static memory.
- `int count` represents the number count.

Implement the following functions,

- [15p]`void print()`: prints the whole memory to the console in $1 + 1i$ format.
- [15p]`void print_polar()`: prints the whole memory to the console in $1.414214[+45.000001deg]$ format.
- [20p]`void push(float re,float im)`: adds a complex number to the memory if capacity not full.
- [20p]`void pop()`: removes the last added complex number from the memory and places zeros.
- [15p]`void sort()`: sorts the complex numbers in ascending order in both real and imaginary values.
- [15p]`void sort_polar()`: sorts the complex numbers in ascending order in both magnitude and phase values.

in a single file.

- Submit a single `*.c` file to NINOVA. Other file types will not be accepted nor graded.
- The given main function is not going to be submitted, only the necessary implementation needs to be submitted.
- Your submission will be compiled with a tester `main.c` file. Your code needs to compile without error, or your grade will be zero.
- Each functionality will be tested and added to your grade.
- Late submissions will be deduced 10p for each day late.
- Cheating is not allowed, once cheating is detected all involved submissions will be graded zero.

```c
//**************************************
//** DO NOT SUBMIT THIS FILE
//**************************************
#include <stdio.h>
#include <math.h>

void print();
void print_polar();
void push(float,float);
void pop();
void sort();
void sort_polar();

int main()
{
    push(2,2);
    push(1,1);
    push(1,-1);
    sort_polar();
    print_polar();
    return 0;
}
```

deliverables/main.c

```c
//****************************************
//** SUBMIT ONLY THIS FILE
//** ONLY PUT THE IMPLEMENTATION
//****************************************
#include <stdio.h>
#include <math.h>

#define MAX 10
float mem[2*MAX];
int count=0;

void print()
{
    // add implementation here
}

void print_polar()
{
    // add implementation here
}

void push(float re,float im)
{
    // add implementation here
}

void pop()
{
    // add implementation here
}

void sort()
{
    // add implementation here
}

void sort_polar()
{
    // add implementation here
}
```

deliverables/student.c