

CMPE 312- OPERATING SYSTEMS

EXERCISE 4C(Tuesday 14-16)

Pointer and Functions

In C, when we pass arguments to functions, we pass them by value. We might be in some cases to wish to change the passed arguments' value in the function and receive the new value back once to function has finished. To do this, we can make of use of pointers.

We can use functions with pointers to pass the address of the variables to the functions and access address of function.

Example:

```
#include <stdio.h>
void swap(int *ptr_x, int *ptr_y); //Prototype of swap function declared here
int main(void) {
    int a = 15, b=25;
    swap(&a,&b);
    printf("%d, %d",a,b);
    return 0;
}

void swap(int *ptr_x, int *ptr_y){
    int temp;
    temp = *ptr_x;
    *ptr_x = *ptr_y;
    *ptr_y = temp;
}
```

Structs and Pointers

C is not an object oriented programming language, so we do not have classes and objects.

However, we have Struct type to create and to hold different type of information altogether.

Example:

```
#include <stdio.h>
#include <stdlib.h>
typedef struct country {
    char name[30];
    int year_of_foundation;
    double population;
} countries;

int main(void) {
    countries *my_countries;
    int number_of_countries, i;
    printf("How many countries would you like to record?");
    scanf("%d",&number_of_countries);
    my_countries = malloc(number_of_countries*sizeof(countries));
    for(i = 0; i < number_of_countries; ++i)
    {
        printf("Enter the name and foundation year respectively: ");
        scanf("%s%d", (my_countries+i)->name, &(my_countries+i)->year_of_foundation);
    }
    return 0;
}
```

TASK: You are expected to list also the population info of the countries and display information of the countries one by one.