LAB 5 - Pointers and Structs

1. What is the difference between the following two declarations.   2 pts

    int *p[10];

    int (*p) [10];

2. Please explain the following two declarations.   3 pts

    int (*p)(char (*a)[]);

    int *p(char (*a)[]);

3. Take a look at the following code snippet. Here **pFcn** is a pointer to a function that takes two integer arguments and returns an integer. To make the different cases in switch statement work, write a few functions such as 'Add' , 'Subtract', 'Multiply', 'Divide' that take two integers as arguments and return an integer. Print the value of **pFcn(X,Y)** for all these cases.   4 pts

    Submit as a complete working code named as **FunctionPointer.c.**

```
#include <stdio.h>
int(*pFcn)(int, int);
int main(){
    int X, Y, operation;
    printf("Enter a number: ");
    scanf(" %d", &X);
    printf("Enter another number: ");
    scanf(" %d", &Y);
    printf("Enter an operation (0=add, 1=subtract, 2=multiply, 3
= Divide ): ");
    scanf(" %d", &operation);
   switch (operation) {
    //  case 0: pFcn = Add; break;
    //  case 1: pFcn = Subtract; break;
    //  case 2: pFcn = Multiply; break;
    //  case 3: pFcn = Divide; break;
       }
    //  printf("The answer is : %d\n", pFcn(X,Y));
       return 0;
}
```

4. Take a look at the following code snippet: 2 pts


```
struct Person{
    char name[BUFSIZ];
    char ssn[BUFSIZ];
    int age;
    float height;
    float weight;
};
struct Person p1;

strcpy(p1.name, "Alfred Morino");
strcpy(p1.ssn, "496-50-2260");
p1.age = 50;
p1.height = 170.5;
p1.weight = 70.5;


struct Person *ptr = &p1;
```

What will be printed by the following expressions? Provide the screenshot.

printf("Name = %s\nSSN = %s\nAge = %d\nHeight(cm) = %g\nWeight(kg) = %g\n", p1.name, p1.ssn,p1.age, p1.height, p1.weight);

printf("Name = %s\nSSN = %s\nAge = %d\nHeight(cm) = %g\nWeight(kg) = %g\n", ptr->name, ptr->ssn, ptr->age, ptr->height, ptr->weight);

printf("Name = %s\nSSN = %s\nAge = %d\nHeight(cm) = %g\nWeight(kg) = %g\n", (*ptr).name, (*ptr).ssn, (*ptr).age, (*ptr).height, (*ptr).weight);

printf("Name = %s\nSSN = %s\nAge = %d\nHeight(cm) = %g\nWeight(kg) = %g\n", (&p1)->name, (&p1)->ssn, (&p1)->age, (&p1)->height, (&p1)->weight);

5. Take a look at the attached file "**structConversion.c**". Use the following struct template named "**Person**" in the program. Modify existing **printData** and **readData** functions as follows. (9 pts in total)

      void printData(struct Person x);   3 pts

      struct Person readData();   3 pts

      Replace **gets** with **fgets**.   3 pts

You can use any additional helper functions. Submit the complete file as "**structConversionLab5.c**" file.

<u>Submission:</u>

A zip file containing:
- Your Complete C code named **FunctionPointer.c, structConversionLab5.c** and a pdf file named **PointersAndStructLab5.pdf** containing the answers to questions 1, 2 with output capture for C code for question 4.

Name your zip file with your last name first letter of your first name Lab5.zip (ex: **yasminsLab5.zip**)

<u>Submission deadline is: 11:59 pm, Thursday, March 4. No late submissions will be considered.</u>