



# **PROGRAMMING LAB**

## **ASSIGNMENT- 8**

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**2020ITB028**

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**INDIAN INSTITUTE OF**  
**ENGINEERING**  
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**1) Explore qsort() function. Use qsort() to sort a set of integers, a set floating point numbers and a set of names (strings) in ascending order by a single program.**

```
/*
```

```
Explore qsort() function. Use qsort() to sort a set of integers, a set floating point numbers and a set of
```

```
names (strings) in ascending order by a single program.
```

```
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```

```
*/
```

```
#include <stdio.h>
```

```
#include <string.h>
```

```
#include <stdlib.h>
```

```
int cmpstring(const void* p1, const void* p2)
```

```
{
```

```
    const char** a= (const char**)p1;
```

```
    const char** b= (const char**)p2;
```

```
    return strcmp(*a, *b);
```

```
}
```

```
int cmpint(const void* p1, const void* p2)
```

```
{
```

```
    const int* a= (const int*)p1;
```

```
    const int* b= (const int*)p2;
```

```
    return *a-*b;
```

```
}
```

```
int cmpfloat(const void* p1, const void* p2)
```

```
{
```

```
    const float* a= (const float*) p1;
```

```
    const float* b= (const float*) p2;
```

```
    return (int)((*a-*b)*1000.0f);
```

```
}
```

```
void main()
```

```

{
    char* arr[] = {"APPLE", "MANGO", "BANANA", "CUCUMBER", "LITCHI", "PAPAYA"};
    int arr2[] = {24, 453, 344, 12, 789, 123, 56, 433, 356};
    float arr3[] = {214.23f, 45213.34f, 1342.789f, 1423.56f, 43.356f};
    qsort(arr, 6, sizeof(char*), cmpstring);
    qsort(arr2, 9, sizeof(int), cmpint);
    qsort(arr3, 5, sizeof(float), cmpfloat);
    for(int i=0; i<6; i++)
        printf("%s ", arr[i]);
    printf("\n");
    for(int i=0; i<9; i++)
        printf("%d ", arr2[i]);
    printf("\n");
    for(int i=0; i<5; i++)
        printf("%f ", arr3[i]);
}

```

## OUTPUT:

```

PS C:\Users\De11\Desktop\Programming lab> cd "c:\Users\De11\Desktop\Programming lab\" ; if ($?) { gcc ass8_1.c -o ass8_1 } ; if ($?) { .\ass8_1 }
APPLE BANANA CUCUMBER LITCHI MANGO PAPAYA
12 24 56 123 344 356 433 453 789
43.355999 214.229996 1342.788940 1423.560059 45213.339844
PS C:\Users\De11\Desktop\Programming lab>

```

**2) Design a set of functions (such as ADD, DIV, POWER (to do  $x^y$ ), etc.) of your choice and store them in an array of function pointers. Write a program that will use these functions from the array, based on the user input. DO NOT USE switch-case/if-else to solve this problem.**

/\*

Design a set of functions (such as ADD, DIV, POWER (to do  $x^y$ ), etc.) of your choice and store them in an array of function pointers.

Write a program that will use these functions from the array, based on the user input.

DO NOT USE switch-case/if-else to solve this problem.

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\*/

```
#include <stdio.h>
```

```
#include <math.h>
```

```
int ADD(int a, int b)
```

```
{
```

```
    return a+b;
```

```
}
```

```
int DIFF(int a, int b)
```

```
{
```

```
    return a-b;
```

```
}
```

```
int DIV(int a, int b)
```

```
{
```

```
    return a/b;
```

```
}
```

```
int POW(int x, int y)
```

```
{
```

```
    return (int) pow(x, y);
```

```
}
```

```
void main()
```

```

{
    int (*ptr1)(int, int) = &ADD;
    int (*ptr2)(int, int)= &DIFF;
    int (*fun_arr[4])(int, int)= {ptr1, ptr2, &DIV, &POW};
    int ch;

    printf("Enter:\n1 for ADD\n2 for SUBTRACT\n3 for DIVIDE\n4 for
EXPONENT\n: ");
    scanf("%d", &ch);

    int a, b;

    printf("\nEnter two values: ");
    scanf("%d %d", &a, &b);
    printf("\nAnswer: %d", fun_arr[ch-1](a, b));
}

```

## OUTPUT:

```

PS C:\Users\Dell\Desktop\Programming lab> cd "c:\Users\Dell\Desktop\Programming lab\" ; if ($?) { gcc ass8_2.c -o ass8_2 } ; if ($?) { .\ass8_2 }
Enter:
1 for ADD
2 for SUBTRACT
3 for DIVIDE
4 for EXPONENT
: 1

Enter two values: 12 13

Answer: 25
PS C:\Users\Dell\Desktop\Programming lab> cd "c:\Users\Dell\Desktop\Programming lab\" ; if ($?) { gcc ass8_2.c -o ass8_2 } ; if ($?) { .\ass8_2 }
Enter:
1 for ADD
2 for SUBTRACT
3 for DIVIDE
4 for EXPONENT
: 3

Enter two values: 65 13

Answer: 5
PS C:\Users\Dell\Desktop\Programming lab>

```