

National Institute of Technology, Patna



EE lab CSL (2601)

Assignment no 9

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INDEX

Serial No.	Contents	Date	Remarks
1	WAP in C to find the sum of two numbers.	30.06.2021	
2	WAP in C to find the area of the rectangle using function.	30.06.2021	
3	WAP in C to swap the values of two variables using function call by method.	30.06.2021	
4	WAP in C to find the factorial of a given number using function.	30.06.2021	
5	WAP in C to calculate simple interest using function..	30.06.2021	
6	WAP in C to perform arithmetic operations using function..	30.06.2021	
7	WAP in C to print the result of the following series..	30.06.2021	

Q.1. WAP in C to find the sum of the given numbers using function.

```
#include<stdio.h>
int sum( int n1, int n2) {
    return n1+n2;
}
int main() {
    int a,b;
    printf("Enter two numbers to find sum :\n");
    scanf("%d %d", &a, &b);
    printf("Sum of the numbers is : %d", sum(a,b));
    return 0;
}
```



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Workspace

Start here sum_using_function.c

```
1 #include<stdio.h>
2 int sum(int n1,int n2) {
3     return n1+n2;
4 }
5 int main() {
6     int a,b;
7     printf("Enter two numbers to find sum : \n");
8     scanf("%d %d",&a,&b);
9     printf("Sum of the numbers is : %d",sum(a,b));
10    return 0;
11 }
```

C:\Users\Sudhanshu Ranjan\Desktop\snake game\sum_using_function.exe

Enter two numbers to find sum :

24 45

Sum of the numbers is : 69

Process returned 0 (0x0) execution time : 7.255 s

Press any key to continue.

Q.2) WAP in C to find the area of the rectangle using function.

```
#include < stdio.h >
Void areaofRect (int l, int b) {
    int area;
    area = l * b;
    printf ("Area is %d", area);
}

int main() {
    int l, b;
    printf ("Enter the length of Rectangle : ");
    scanf ("%d", &l);
    printf ("Enter the breadth of Rectangle : ");
    scanf ("%d", &b);
    areaofRect (l, b);
    return 0;
}
```



Management

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C:\

Mask:

- C:\
- Anaconda
- Intel
- MinGW
- MSI
- PerfLogs
- Program Files
- Program Files (x86)
- Recovery
- src
- User Manual
- Users
- Windows

```
1 #include<stdio.h>
2 void areaofRect(int l,int b){
3     int area;
4     area = l*b;
5     printf("Area is %d",area);
6 }
7 int main(){
8     int l,b;
9     printf("Enter the length of Rectangle: ");
10    scanf("%d",&l);
11    printf("Enter the breadth of rectangle: ");
12    scanf("%d",&b);
13    areaofRect(l,b);
14    return 0;
15 }
```

```
"C:\Users\Sudhanshu Ranjan\Desktop\snake game\Area_of_rect_function.exe"
Enter the length of Rectangle: 24
Enter the breadth of rectangle: 12
Area is 288
Process returned 0 (0x0) execution time : 11.359 s
Press any key to continue.
```

Q.3) WAP in C to swap the values of two variables using function call by value method.

```
#include <stdio.h>
Void swap(int x, int y){
    int temp;
    temp = x;
    x = y;
    y = temp;
    printf ("\\nAfter swapping : x = %d; y = %d",
           x, y);
}

int main(){
    int x, y;
    printf ("Enter Value of x: ");
    scanf ("%d", &x);
    printf ("Enter Value of y: ");
    scanf ("%d", &y);
    swap(x, y);
    return 0;
}
```



```
#include <stdio.h>
void swap(int x, int y)
{
    int temp;
    temp = x;
    x = y;
    y = temp;
    printf("\n After Swapping : x = %d, y = %d", x, y);
}

int main()
{
    int x, y;
    printf("Enter Value of x : ");
    scanf("%d", &x);
    printf("Enter Value of y : ");
    scanf("%d", &y);
    swap(x, y);

    return 0;
}
```

C:\Users\Sudhanshu Ranjan\Desktop\snake game\Swap_by_function_call.exe

Enter Value of x : 20
Enter Value of y : 30
After Swapping : x = 30, y = 20
Process returned 0 (0x0) execution time : 13.221 s
Press any key to continue.

Q. 4.) WAP in C to find the factorial of the given number using function.

```
#include <stdio.h>
long long factorial (int n) {
    if (n>=1) {
        return n * factorial (n-1);
    }
    else return 1;
}
int main() {
    int a;
    printf ("Enter the number to calculate
            its factorial : ");
    scanf ("%d", &a);
    printf ("factorial is %d", factorial (a));
    return 0;
}
```

factorial_by-recursion.c - Code::Blocks 20.03

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<global> factorial(int n) : long

Management Projects Files FSy Start here sum_using_function.c Area_of_rect_function.c Swap_by_function_call.c factorial_by-recursion.c

C:\ Mask: C:\ Anaconda Intel MinGW MSI PerfLogs Program Files Program Files (x86) Recovery src User Manual Users Windows

```
1 #include <stdio.h>
2 long long factorial(int n) {
3     if (n>=1) {
4         return (n) * factorial(n-1);
5     }
6     else return 1;
7 }
8
9 int main() {
10     int a;
11     printf("Enter the number to calculate its factorial : ");
12     scanf("%d",&a);
13     printf("Factorial is %d",factorial(a));
14     return 0 ;
15 }
16
```

"C:\Users\Sudhanshu Ranjan\Desktop\snake game\factorial_by-recursion.exe"
Enter the number to calculate its factorial : 5
Factorial is 120
Process returned 0 (0x0) execution time : 16.467 s
Press any key to continue.

C:/Users/Sudhanshu Ranjan/Desktop/snake game/factorial_by-recursion.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 5, Col 32, Pos 99 Insert Read/Write default 12:04 PM 08-07-2021

Q.5.) WAP in C to calculate simple interest using function.

```
#include <stdio.h>

float simpleInterest (int P, int r, float t) {
    float si;
    si = (P * r * t) / 100;
    return si;
}

int main () {
    int P, r;
    float t;
    printf ("Enter the principle amount : ");
    scanf ("%d", &P);
    printf ("\nEnter the rate of interest in Percentage : ");
    scanf ("%d", &r);
    printf ("\nEnter the time in years : ");
    scanf ("%f", &t);
    printf ("\nCalculated simple interest is : %f", simpleInterest (P, r, t));
    printf ("\nCalculated final amount including simple interest is : %f", P + simpleInterest (P, r, t));
    return 0;
}
```

Management x Start here x sum_using_function.c x Area_of_rect_function.c x Swap_by_function_call.c x factorial_by-recursion.c x simple_interest_function.c x

```
1 #include<stdio.h>
2 float simpleInterest(int p,int r, float t){
3     float si;
4     si = (p*r*t)/100;
5     return si;
6 }
7 int main(){
8     int p,r;
9     float t;
10    printf("Enter the principle amount : ");
11    scanf("%d",&p);
12    printf("\nEnter the rate of interest in percentage : ");
13    scanf("%d",&r);
14    printf("\nEnter the time in years : ");
15    scanf("%f",&t);
16    printf("\nCalculated simple interest is : %f",simpleInterest(p,r,t));
17    printf("\nCalculated final amount including simple interest is : %f",p+simpleInterest(p,r,t));
18    return 0;
19 }
20
```

"C:\Users\Sudhanshu Ranjan\Desktop\snake game\simple_interest_fu... Enter the principle amount : 2000
Enter the rate of interest in percentage : 10
Enter the time in years : 2
Calculated simple interest is : 400.000000
Calculated final amount including simple interest is : 2400.000000
Process returned 0 (0x0) execution time : 14.567 s
Press any key to continue.

C:\Users\Sudhanshu Ranjan\Desktop\snake game\simple_interest_function.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 16, Col 71, Pos 412 Insert Read/Write default 12:17 PM 08-07-2021 ENG

Q.6 WAP in C to perform various arithmetic operation using function.

```
#include <std.h>
```

```
Void arithmeticOperation(int a, int b, char operation){
```

```
    float d = a/b;
```

```
    switch(operation){
```

```
        case '+':
```

```
            printf("Sum is %d", a+b);
```

```
            break;
```

```
        case '-':
```

```
            printf("Difference is %d", a-b);
```

```
            break;
```

```
        case '*':
```

```
            printf("Multiplication is %d", a*b);
```

```
            break;
```

```
        case '/':
```

```
            printf("Division is %f", d);
```

```
            break;
```

```
}
```

```
}
```

```
int main(){
```

```
    int a, b;
```

```
    char operation, m;
```

```
    do{
```

```
        printf("\t *** -- Arithmetic Calculator -- * *\n");
```

```
        printf("\nEnter two numbers to perform arithmetic  
operations : \n");
```

```
        Scanf ("%d %d,%d,%d");
```

```
printf ("\\n For addition enter '+'\\n For multiplication enter '*'\\n");
printf ("\\n For subtraction enter '-'\\n For division enter '/'\\n");
getchar();
scanf ("%c", &operation);
arithmeticOperation(a, b, operation);
printf ("\\n For calculating another Value press (y/y) :\\n");
getchar();
scanf ("%c", &m);
} while (m == 'y' || m == 'Y');
return 0;
}
```

arithematic_operations_function.c - Code::Blocks 20.03

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<global> main0 : int

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```
#include<stdio.h>
void arithmeticOperation(int a,int b, char operation){
    float d = a/b;
    switch (operation){
        case '+':
            printf("sum is %d",a+b);
            break;
        case '-':
            printf("Difference is %d",a-b);
            break;
        case '*':
            printf("Multiplication is %d",a*b);
            break;
        case '/':
            printf("Division is %f ",d);
            break;
    }
}
int main(){
    int a,b;
    char operation,m;
    do{
        printf("\t*****-----Arithmetic Calculator-----***** \n");
        printf("\nEnter two numbers to perform arithmetic operations : \n");
        scanf("%d %d",&a,&b);
        printf("\nFor addition enter '+'\nFor multiplication enter '*' \n");
        printf("For subtraction enter '-' \nFor division enter '/' \n");
        getchar();
        scanf("%c",&operation);
        arithmeticOperation(a,b,operation);
        printf("\nFor calculating another value press (Y/y): \n");
        getchar();
        scanf("%c",&m);
    }while(m == 'Y' || m == 'y');
    return 0;
}
```

"C:\Users\Sudhanshu Ranjan\Desktop\snake game\arithematic_operations_function.exe"
*****-----Arithmetic Calculator-----*****
Enter two numbers to perform arithmetic operations :
12 4
For addition enter '+'
For multiplication enter '*'
For subtraction enter '-'
For division enter '/':
/
Division is 3.000000
For calculating another value press (Y/y):
y
*****-----Arithmetic Calculator-----*****
Enter two numbers to perform arithmetic operations :
12 4
For addition enter '+'
For multiplication enter '*'
For subtraction enter '-'
For division enter '/':
-
Difference is 8
For calculating another value press (Y/y):

C:\Users\Sudhanshu Ranjan\Desktop\snake game\arithematic_operations_function.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 27, Col 69, Pos 743 Insert Read/Write default 02:14 PM 08-07-2021

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Q7 WAP in C to double the elements of an array using function.

```
#include <stdio.h>
void doubleArr(int A[100], int n) {
    for(int i=0; i<n; i++) {
        printf("%d\t", A[i]*2);
    }
}
int main() {
    int n;
    printf("Enter the number of elements in the
array: ");
    scanf("%d", &n);
    int arr[n];
    printf("\nEnter the array elements : ");
    for(int i=0; i<n; i++) {
        scanf("%d", &arr[i]);
    }
    printf("\nAfter doubling the array we get: ");
    doubleArr(arr, n);
    return 0;
}
```



<global> | doubleArr(int A[100], int n) : void

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- Anaconda
- Intel
- MinGW
- MSI
- PerfLogs
- Program Files
- Program Files (x86)
- Recovery
- src
- User Manual
- Users
- Windows

```
Start here x sum_using_function.c x Area_of_rect_function.c x Swap_by_function_call.c x factorial_by-recursion.c x simple_interest_function.c x arithmetic_operations_function.c x double_array_elements.c x
1 #include<stdio.h>
2 void doubleArr(int A[100],int n){
3     for(int i=0;i<n;i++){
4         printf("%d\t",A[i]*2);
5     }
6 }
7 int main(){
8     int n;
9     printf("Enter the number of elements in the array :");
10    scanf("%d",&n);
11    int arr[n];
12    printf("\n\nEnter the array elements :\n");
13    for(int i=0;i<n;i++){
14        scanf("%d",&arr[i]);
15    }
16    printf("\n\nAfter doubling the array we get: \n");
17    doubleArr(arr,n);
18
19 }
20
```

C:\Users\Sudhanshu Ranjan\Desktop\snake game\double_array_elements.exe

Enter the number of elements in the array :8

Enter the array elements :

12 24 6 7 99 10 2 34

After doubling the array we get:

24 48 12 14 198 20 4 68

Process returned 0 (0x0) execution time : 31.832 s

Press any key to continue.

