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COURSE: ADVANCED C PROGRAMMING

LAB SLOT: L47+48

LAB ASSIGNMENT: 1

## 1.

## A.

## Write a C program to implement a simple calculator using if statement. Implement basic arithmetic operations such addition, subtraction, multiplication , and division operations.

## SOURCE CODE:

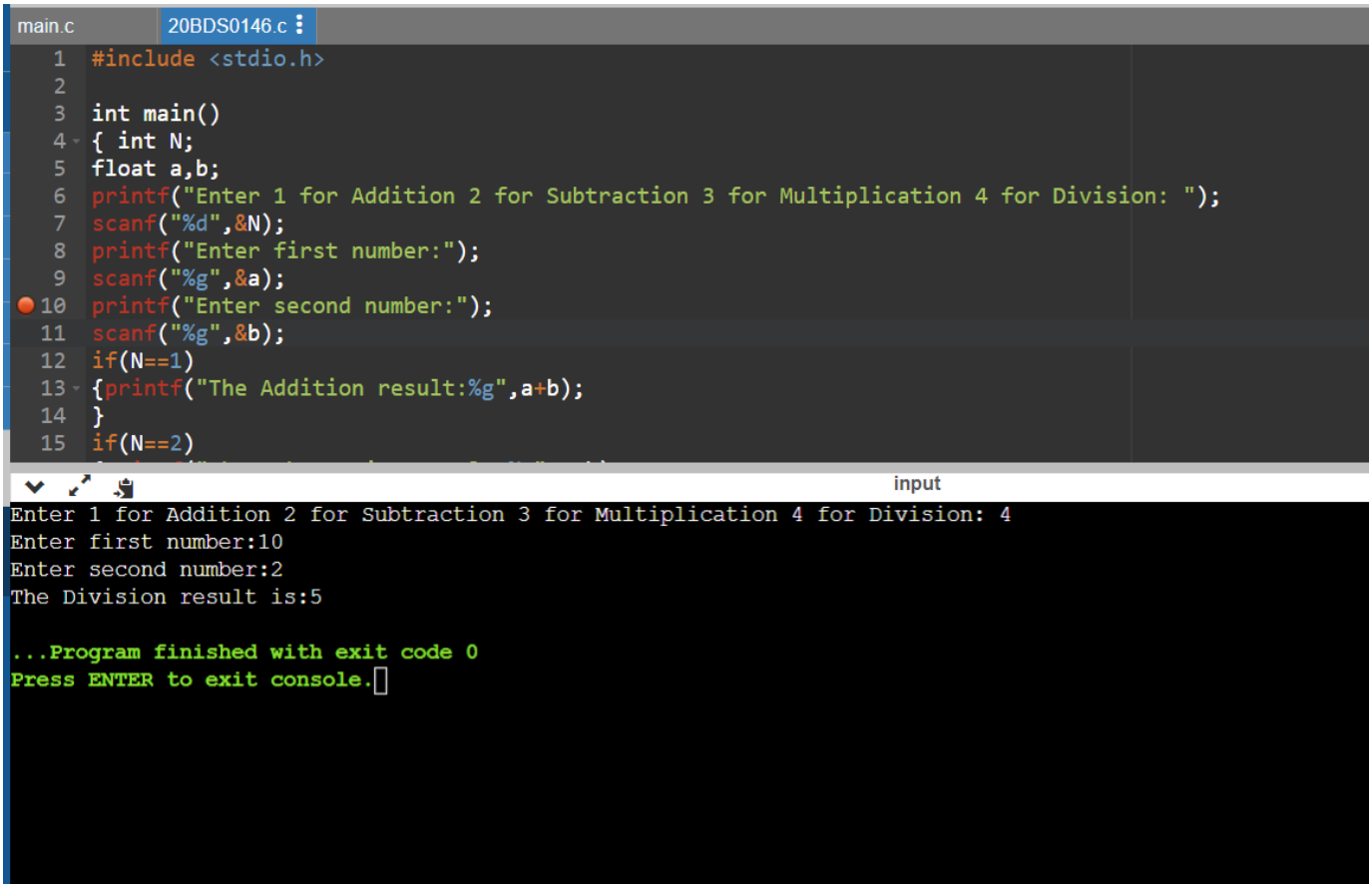
```
#include <stdio.h>


int main()
{ int N;
float a,b;
printf("Enter 1 for Addition 2 for Subtraction 3 for Multiplication 4 for Division: ");
scanf("%d",&N);
printf("Enter first number:");
scanf("%g",&a);
printf("Enter second number:");
scanf("%g",&b);
if(N==1)
{printf("The Addition result:%g",a+b);
```

```
}
if(N==2)
{printf("The Subtraction result:%g",a-b);
}
if(N==3)
{printf("The Multiplication result:%g",a*b);
}
if(N==4)
{printf("The Division result is:%g",a/b);
}

   return 0;
}
```

# OUTPUT:


main.c
20BDS0146.c
1 #include <stdio.h>
2
3 int main()
4 { int N;
5 float a,b;
6 printf("Enter 1 for Addition 2 for Subtraction 3 for Multiplication 4 for Division: ");
7 scanf("%d",&N);
8 printf("Enter first number:");
9 scanf("%g",&a);
10 printf("Enter second number:");
11 scanf("%g",&b);
12 if(N==1)
13 {printf("The Addition result:%g",a+b);
14 }
15 if(N==2)
input
Enter 1 for Addition 2 for Subtraction 3 for Multiplication 4 for Division: 4
Enter first number:10
Enter second number:2
The Division result is:5
...Program finished with exit code 0
Press ENTER to exit console.

## B.

## Write a C program to implement a simple calculator using switch statement. Implement basic arithmetic operations such addition, subtraction, multiplication , and division operations.

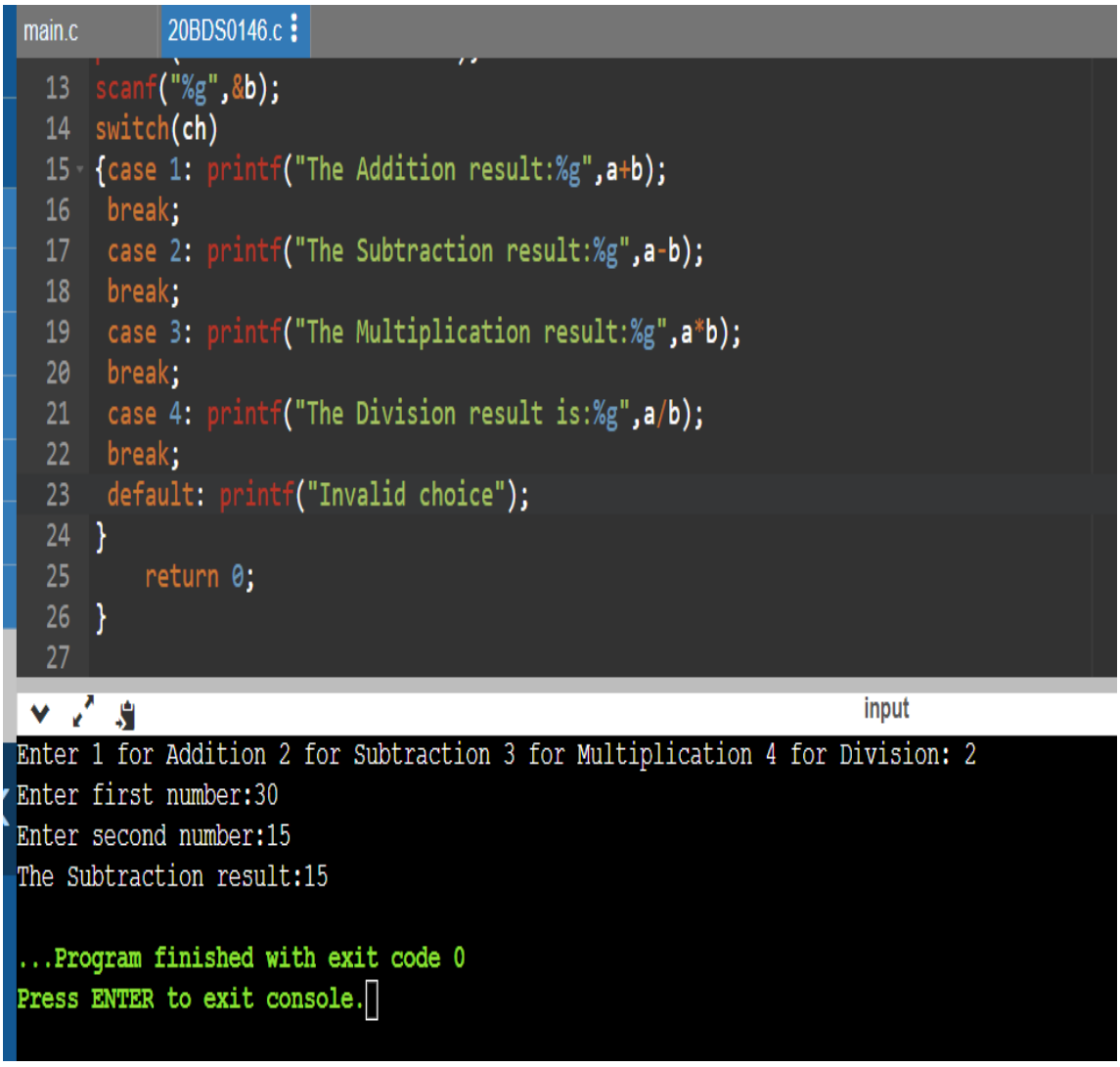
## SOURCE CODE:

```
#include <stdio.h>


int main()
{ int N;
int ch;
float a,b;
printf("Enter 1 for Addition 2 for Subtraction 3 for Multiplication 4 for Division: ");
scanf("%d",&N);
ch=N;
printf("Enter first number:");
scanf("%g",&a);
printf("Enter second number:");
scanf("%g",&b);
switch(ch)
{case 1: printf("The Addition result:%g",a+b);
break;
case 2: printf("The Subtraction result:%g",a-b);
```

```
break;
case 3: printf("The Multiplication result:%g",a*b);
break;
case 4: printf("The Division result is:%g",a/b);
break;
default: printf("Invalid choice");
}
   return 0;
}
```

# OUTPUT:


main.c
20BDS0146.c
scanf("%g",&b);
switch(ch)
{case 1: printf("The Addition result:%g",a+b);
break;
case 2: printf("The Subtraction result:%g",a-b);
break;
case 3: printf("The Multiplication result:%g",a*b);
break;
case 4: printf("The Division result is:%g",a/b);
break;
default: printf("Invalid choice");
}
return 0;
}
input
Enter 1 for Addition 2 for Subtraction 3 for Multiplication 4 for Division: 2
Enter first number:30
Enter second number:15
The Subtraction result:15
...Program finished with exit code 0
Press ENTER to exit console.

## C.

## Write a C program to implement a simple calculator using function. Implement basic arithmetic operations such addition, subtraction, multiplication , and division operations. Define user defined function for each basic arithmetic operations.

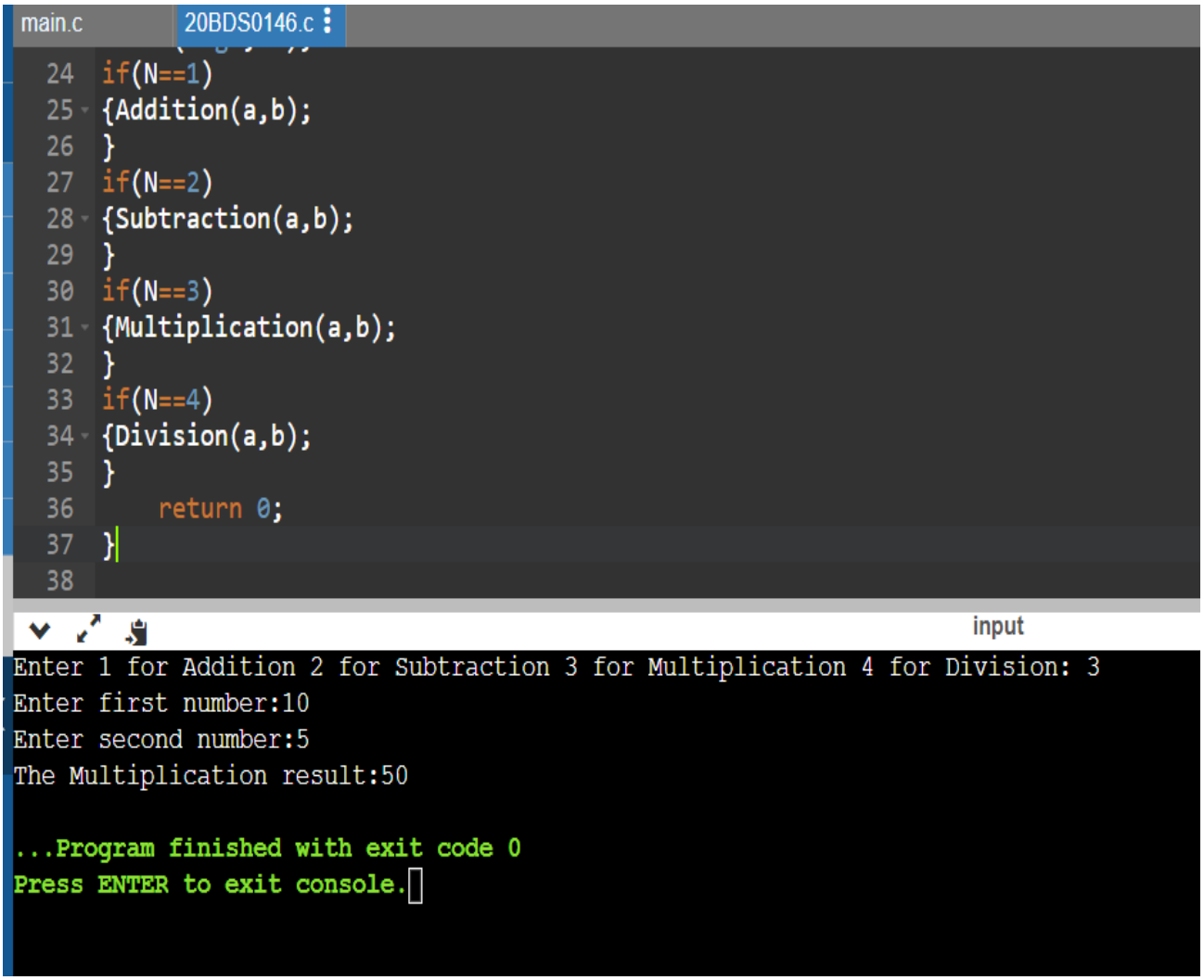
## SOURCE CODE:

```
#include <stdio.h>

void Addition(float num1,float num2)
{printf("The Addition result:%g",num1+num2);
}
void Subtraction(float num1,float num2)
{printf("The Subtraction result:%g",num1-num2);
}
void Multiplication(float num1,float num2)
{printf("The Multiplication result:%g",num1*num2);
}
void Division(float num1,float num2)
{printf("The Division result is:%g",num1/num2);
}
```

```
int main()
{ int N;
float a,b;
printf("Enter 1 for Addition 2 for Subtraction 3 for Multiplication 4 for Division: ");
scanf("%d",&N);
printf("Enter first number:");
scanf("%g",&a);
printf("Enter second number:");
scanf("%g",&b);
if(N==1)
{Addition(a,b);
}
if(N==2)
{Subtraction(a,b);
}
if(N==3)
{Multiplication(a,b);
}
if(N==4)
{Division(a,b);
}
   return 0;
}
```

# OUTPUT:


main.c
20BDS0146.c
24 if(N==1)
25 {Addition(a,b);
26 }
27 if(N==2)
28 {Subtraction(a,b);
29 }
30 if(N==3)
31 {Multiplication(a,b);
32 }
33 if(N==4)
34 {Division(a,b);
35 }
36 return 0;
37 }
38
input
Enter 1 for Addition 2 for Subtraction 3 for Multiplication 4 for Division: 3
Enter first number:10
Enter second number:5
The Multiplication result:50
...Program finished with exit code 0
Press ENTER to exit console.

## 2.

## A.

## Write a C program to perform the following operations:

## i) Read 'n' integers in ascending order. (sorted order)

## ii) Reverse the input in the same array. ( You should not use any additional variable, but the last location your array can be used.)

## iii) Insert a new integer into the reversed array in its correct position. ( You should not use any additional variables)

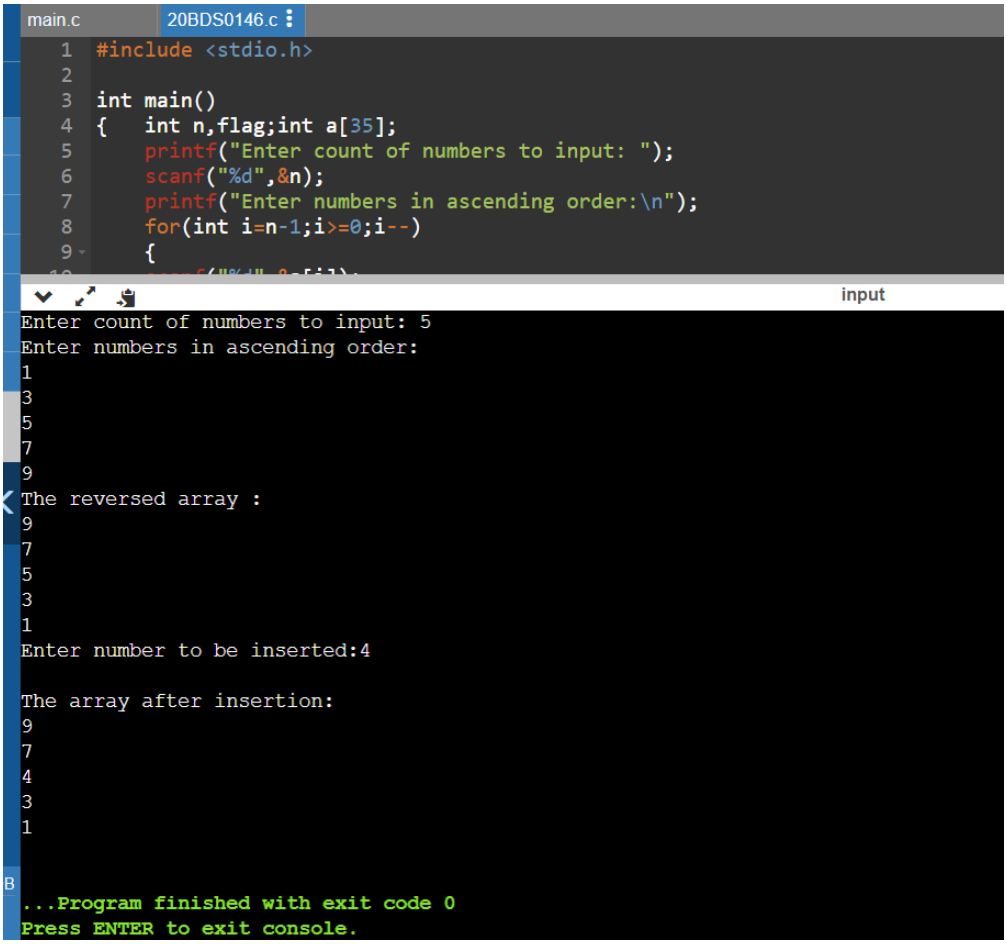
## SOURCE CODE:

```
#include <stdio.h>
 int main()
{   int n,flag;int a[35];
    printf("Enter count of numbers to input: ");
    scanf("%d",&n);
    printf("Enter numbers in ascending order:\n");
    for(int i=n-1;i>=0;i--)
    {
    scanf("%d",&a[i]);
    }
```

```
    printf("The reversed array :\n");
    for(int i=0;i<n;i++)
    {printf("%d\n",a[i]);}
     printf("Enter number to be inserted:");
     scanf("%d",&flag);
     int i;
     for ( i =0;(i<a[i] && a[i]<flag); i++)
       { a[i] = a[i+1];}
     a[i+2] = flag;
     printf("\nThe array after insertion:\n");
     for (i = 0; i <n; i++)
       { printf("%d\n", a[i]);
}

    return 0;
}
```

# OUTPUT:


main.c
20BDS0146.c
1 #include <stdio.h>
2
3 int main()
4 { int n,flag;int a[35];
5 printf("Enter count of numbers to input: ");
6 scanf("%d",&n);
7 printf("Enter numbers in ascending order:\n");
8 for(int i=n-1;i>=0;i--)
9 {
input
Enter count of numbers to input: 5
Enter numbers in ascending order:
1
3
5
7
9
The reversed array :
9
7
5
3
1
Enter number to be inserted:4
The array after insertion:
9
7
4
3
1
...Program finished with exit code 0
Press ENTER to exit console.

## B.

## Write a C Program to perform the following operations:

## i) Read 'n' integers in any order.

## ii) Find the Kth smallest integer of a given set of integers using function. ( For example, if k=5 means return the 5th smallest integer.

## SOURCE CODE:

```
#include <stdio.h>
void kfunc(int num[], int n, int k)
{ int a;
for (int i = 0; i < n; ++i){
     for (int j = i + 1; j < n; ++j){
       if (num[i] > num[j]){
          a = num[i];
          num[i] = num[j];
          num[j] = a;
       }
     }
  }
printf("The element is: %d",num[k-1]);

}
```

```
int main()
{  int a[20];int N;int res,k;
  printf("enter number of elements in an array:");
   scanf("%d", &N);
   printf("Enter the elements:\n");
   for (int i = 0; i < N; ++i)
      {scanf("%d", &a[i]);}
   printf("enter the value of n to find nth smallest number:");
   scanf("%d", &k);
   kfunc(a, N, k);
 return 0;
}
```

# OUTPUT:

main.c | 20BDS0146.c

```
11          }
12      }
13       printf("The element is: %d",num[k-1]);
14
15  }
16
17  int main()
18  {  int a[20];int N;int res,k;
19     printf("enter number of elements in an array:");
20      scanf("%d", &N);
21      printf("Enter the elements:\n");
22      for (int i = 0; i < N; ++i)
23          {scanf("%d", &a[i]);}
24      printf("enter the value of n to find nth smallest number:");
25      scanf("%d", &k);
26
27
28
29       kfunc(a, N, k);
30
31       return 0;
```

input

```
enter number of elements in an array:5
Enter the elements:
3
9
5
1
7
enter the value of n to find nth smallest number:3
The element is: 5

...Program finished with exit code 0
Press ENTER to exit console.
```