

PRACTICE LAB ASSIGNMENT 5

1. Write a program to print the following pattern on the output screen.

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

CODE

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

```
void main()
```

```
{
```

```
int i, j;
```

```
for(i=1; i<=5; i++)
```

```
{
```

```
for(j=1; j<=5; j++)
```

```
{
```

```
printf("%d", j);
```

```
}
```

```
printf("\n");
```

```
}
```

```
}
```

```
#include <stdio.h>
void main()
{
    int i, j;
    for(i=1; i<=5; i++)
    {
        for(j=1; j<=5; j++)
        {
            printf("%d", j);
        }
        printf("\n");
    }
}
```

SS of the OUTPUT

```
student@HP-280-G3-MT: ~/Desktop
student@HP-280-G3-MT:~$ pwd
/home/student
student@HP-280-G3-MT:~$ cd Desktop
student@HP-280-G3-MT:~/Desktop$ ls
a.out  me  q1.c  Untitled Folder
student@HP-280-G3-MT:~/Desktop$ gcc q1.c
student@HP-280-G3-MT:~/Desktop$ ./a.out
12345
12345
12345
12345
12345
student@HP-280-G3-MT:~/Desktop$
```

2. Write a program to print the following pattern on the output screen.

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

CODE

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

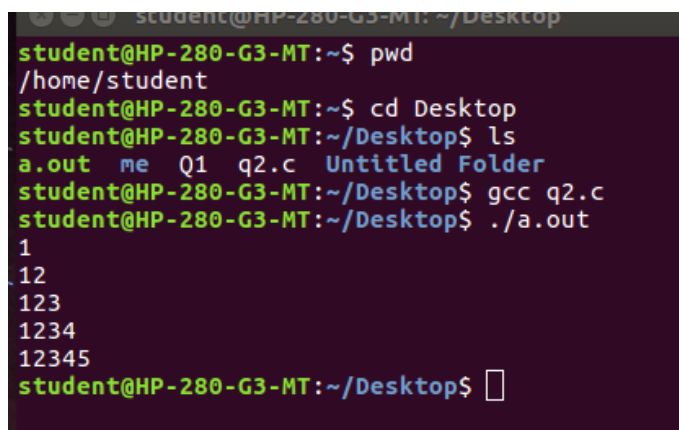
```
void main()
```

```
{  
    int i, j;  
    for(i=1; i<=5; i++)  
    {  
        for(j=1; j<=i; j++)  
        {  
            printf("%d", j);  
        }  
        printf("\n");  
    }  
}
```



```
#include <stdio.h>  
void main()  
{  
    int i, j;  
    for(i=1; i<=5; i++)  
    {  
        for(j=1; j<=i; j++)  
        {  
            printf("%d", j);  
        }  
        printf("\n");  
    }  
}
```

SS of the OUTPUT



```
student@HP-280-G3-MT: ~/Desktop  
student@HP-280-G3-MT:~$ pwd  
/home/student  
student@HP-280-G3-MT:~$ cd Desktop  
student@HP-280-G3-MT:~/Desktop$ ls  
a.out  me  Q1  q2.c  Untitled Folder  
student@HP-280-G3-MT:~/Desktop$ gcc q2.c  
student@HP-280-G3-MT:~/Desktop$ ./a.out  
1  
1 2  
1 2 3  
1 2 3 4  
1 2 3 4 5  
student@HP-280-G3-MT:~/Desktop$
```

3. Write a program to print the following pattern on the output screen.

1

2 1
3 2 1
4 3 2 1
5 4 3 2 1

CODE

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

```
void main()
```

```
{
```

```
int i, j;
```

```
for(i=1; i<=5; i++)
```

```
{
```

```
for(j=i; j>=1; j--)
```

```
{
```

```
printf("%d", j);
```

```
}
```

```
printf("\n");
```

```
}
```

```
}
```

SS of the OUTPUT



```
student@HP-280-G3-MT:~$ pwd
/home/student
student@HP-280-G3-MT:~$ cd Desktop
student@HP-280-G3-MT:~/Desktop$ ls
a.out  me  Q1  Q2  q2.c  Untitled Folder
student@HP-280-G3-MT:~/Desktop$ gcc q3.c
student@HP-280-G3-MT:~/Desktop$ ./a.out
1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
student@HP-280-G3-MT:~/Desktop$
```

4. Write a program using “Nested for” loop to print the following pattern on the output screen.

1

0 1

1 0 1

0 1 0 1

CODE

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

```
void main()
```

```
{
```

```
int i, j;
```

```
for(i=1; i<=4; i++)
```

```
{
```

```
for(j=i; j>=1; j--)
```

```
{
```

```
if(j%2 == 0)
```

```
printf("0");
```

```
else
```

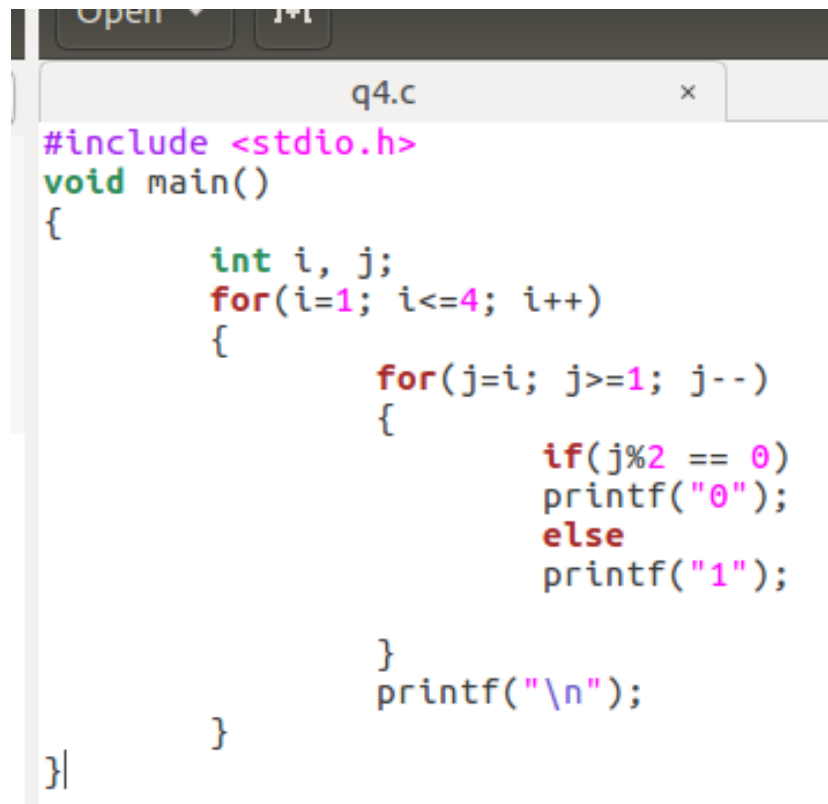
```
printf("1");
```

```
}
```

```
printf("\n");
```

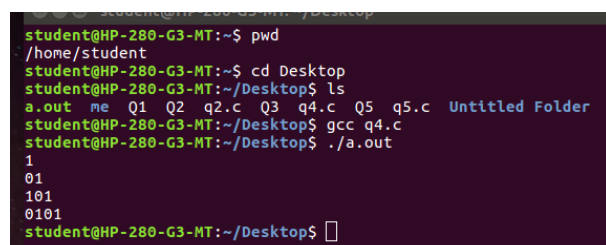
```
}
```

```
}
```



```
q4.c
#include <stdio.h>
void main()
{
    int i, j;
    for(i=1; i<=4; i++)
    {
        for(j=i; j>=1; j--)
        {
            if(j%2 == 0)
                printf("0");
            else
                printf("1");
        }
        printf("\n");
    }
}
```

SS of the OUTPUT



```
student@HP-280-G3-MT:~$ pwd
/home/student
student@HP-280-G3-MT:~$ cd Desktop
student@HP-280-G3-MT:~/Desktop$ ls
a.out  me  Q1  Q2  q2.c  Q3  q4.c  Q5  q5.c  Untitled Folder
student@HP-280-G3-MT:~/Desktop$ gcc q4.c
student@HP-280-G3-MT:~/Desktop$ ./a.out
1
0 1
1 0 1
0 1 0 1
student@HP-280-G3-MT:~/Desktop$
```

5. Write a program to print the following pattern on the output screen.

1

1 0

1 0 1
1 0 1 0
1 0 1 0 1

CODE

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

```
void main()
```

```
{
```

```
int i, j;
```

```
for(i=1; i<=5; i++)
```

```
{
```

```
for(j=1; j<=i; j++)
```

```
{
```

```
if(j%2 == 0)
```

```
printf("0");
```

```
else
```

```
printf("1");
```

```
}
```

```
printf("\n");
```

```
}
```

```
}
```

```
#include <stdio.h>
void main()
{
    int i, j;
    for(i=1; i<=5; i++)
    {
        for(j=1; j<=i; j++)
        {
            if(j%2 == 0)
                printf("0");
            else
                printf("1");
        }
        printf("\n");
    }
}
```

SS of the OUTPUT

```
student@HP-280-G3-MT:~$ pwd
/home/student
student@HP-280-G3-MT:~$ cd Desktop
student@HP-280-G3-MT:~/Desktop$ ls
a.out  me  Q1  Q2  q2.c  Q3  q4.c  q5.c  Untitled Folder
student@HP-280-G3-MT:~/Desktop$ gcc q5.c
student@HP-280-G3-MT:~/Desktop$ ./a.out
1
10
101
1010
10101
student@HP-280-G3-MT:~/Desktop$
```

6. Write a C program to find a peculiar 2-digit number which is three times the sum of its digits.

CODE

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

```
#include <stdio.h>

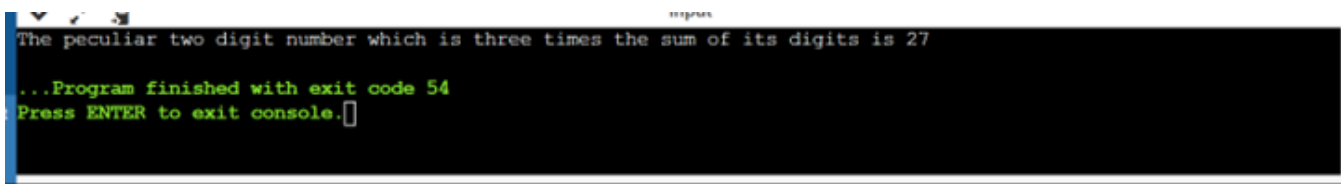
void main()
{
    int i, n;
    for(i = 10; i <= 99; i++)
    {
        if (i == (3 * ((i%10) + (i/10))))
        {
            n = 1;
            printf("The peculiar two digit number which is three times the sum of its digits is %d", i);
        }
        else
            n = 0;
    }
}
```

```

void main()
{
    int i, n;
    for(i = 10; i <= 99; i++)
    {
        if (i == (3 * ((i%10) + (i/10))))
        {
            n = 1;
            printf("The peculiar two digit number which is three times the sum of its digits is %d",
i);
        }
        else
            n = 0;
    }
}

```

SS of the OUTPUT



```

The peculiar two digit number which is three times the sum of its digits is 27
...Program finished with exit code 54
Press ENTER to exit console.

```

7. Write a program to print the following pattern on the output screen.

```

*
***
*****

```

CODE

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

```
void main()
```

```
{
```

```
int i, j, l;
```

```
for(i = 1; i <= 5; ++i, l = 0)
```

```
{
```

```
for(j = 1; j <= (5 - i); j++)
```

```
{
```

```
printf(" ");
```

```
}
```

```
while(l != ((2 * i) - 1))
```

```
{
```

```
printf("*");
```

```
l++;
```

```
}
```

```
printf("\n");
```

```
}
```

```
}
```

SS of the OUTPUT

```

*
***
*****
*****
*****

...Program finished with exit code 10
Press ENTER to exit console.
```

8. Write a program to print the following pattern on the output screen.

*

A

*A*A*

A*A*A

CODE

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

```
void main()
```

```
{
```

```
    int i, j, l = 7;
```

```
    for(i = 1; i <= l; i++)
```

```
    {
```

```
        for(j = 1; j < l; j++)
```

```
        {
```

```
            printf(" ");
```

```
        }
```

```
        l--;
```

```
        for(j = 1; j <= ((2 * i) - 1); j++)
```

```
        {
```

```
            if(j % 2 == 1)
```

```
                printf("*");
```

```
            else
```

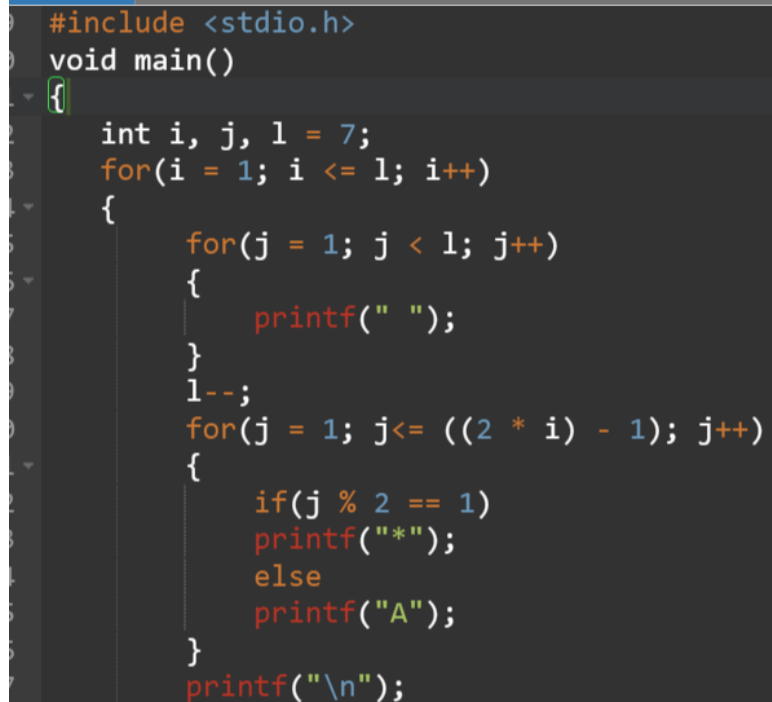
```
                printf("A");
```

```
        }
```

```
        printf("\n");
```

```
    }
```

```
}
```



```
#include <stdio.h>
void main()
{
    int i, j, l = 7;
    for(i = 1; i <= l; i++)
    {
        for(j = 1; j < l; j++)
        {
            printf(" ");
        }
        l--;
        for(j = 1; j <= ((2 * i) - 1); j++)
        {
            if(j % 2 == 1)
                printf("*");
            else
                printf("A");
        }
        printf("\n");
    }
}
```

SS of the OUTPUT


```
  *  
 *A*  
*A*A*  
*A*A*A*
```

```
...Program finished with exit code 5  
Press ENTER to exit console. 
```

9. Write a program to print the following pattern

```
*  
* *
```

```

* * *
* * * *
* * * * *
* * * *
* * *
* *
*

```

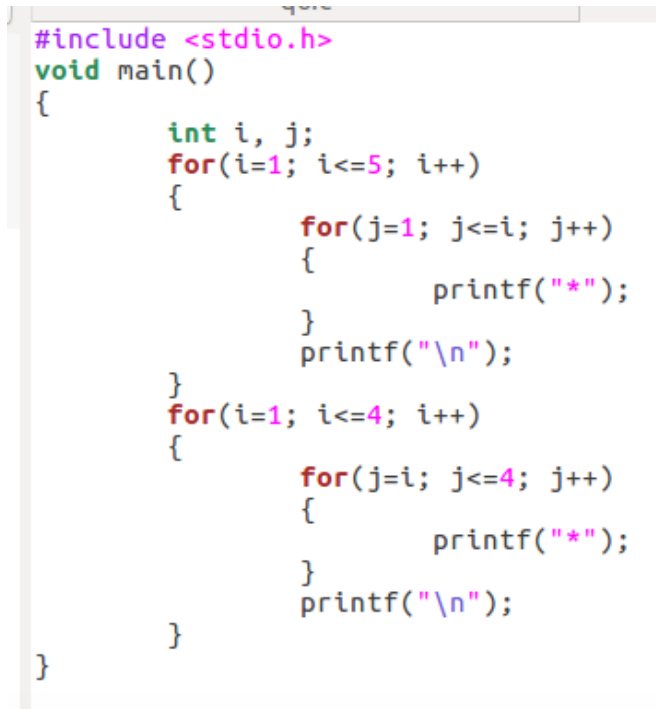
CODE

```

#include <stdio.h>

void main()
{
    int i, j;
    for(i=1; i<=5; i++)
    {
        for(j=1; j<=i; j++)
        {
            printf("*");
        }
        printf("\n");
    }
    for(i=1; i<=4; i++)
    {
        for(j=i; j<=4; j++)
        {
            printf("*");
        }
        printf("\n");
    }
}

```



```

#include <stdio.h>
void main()
{
    int i, j;
    for(i=1; i<=5; i++)
    {
        for(j=1; j<=i; j++)
        {
            printf("*");
        }
        printf("\n");
    }
    for(i=1; i<=4; i++)
    {
        for(j=i; j<=4; j++)
        {
            printf("*");
        }
        printf("\n");
    }
}

```

}

SS of the OUTPUT

```
student@HP-280-G3-MT:~$ pwd
/home/student
student@HP-280-G3-MT:~$ cd Desktop
student@HP-280-G3-MT:~/Desktop$ ls
a.out  me  q6.c  q9.c  Untitled Folder
student@HP-280-G3-MT:~/Desktop$ gcc q9.c
student@HP-280-G3-MT:~/Desktop$ ./a.out
*
**
***
****
*****
****
***
**
*
student@HP-280-G3-MT:~/Desktop$
```

10. Write a program to print the following pattern

```
1
2 1 2
3 2 1 2 3
4 3 2 1 2 3 4
```

```
#include <stdio.h>
void main()
{
    int i, j;
    for(i = 1; i <= 5; i++)
```

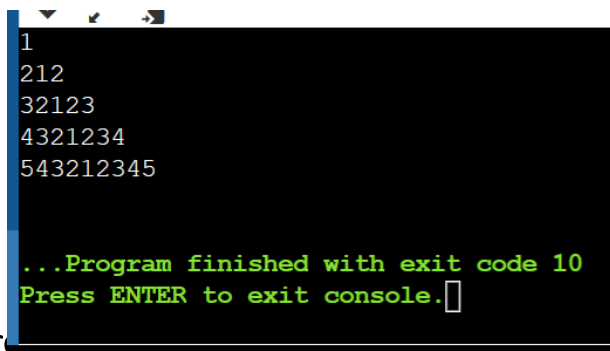
5 4 3 2 1 2 3 4 5

CODE

```
#include <stdio.h>

void main()
{
    int i, j;
    for(i = 1; i <= 5; i++)
    {
        for(j = i; j >= 1; j--)
        {
            printf("%d", j);
        }
        for(j = 2; j <= i; j++)
        {
            printf("%d", j);
        }
        printf("\n");
    }
}
```

SS of the OUTPUT



```
1
212
32123
4321234
543212345

...Program finished with exit code 10
Press ENTER to exit console.
```

11. Write a menu-driven program containing following programs:

- (i) Factorial of any number
- (ii) Prime Number
- (iii) Even or Odd number

CODE

```

#include <stdio.h>

void main()
{
    int n, f, i, d = 1, F = 1, N, p, k = 2, flag = 0;

    printf("\nNumber 1 to find the factorial of any number");
    printf("\nNumber 2 to find if the entered number is prime");
    printf("\nNumber 3 to find if the entered number is odd or even");
    printf("\nEnter your choice: ");
    scanf("%d", &n);

    switch(n)
    {
        default:
        {
            printf("\nWrong input");
            break;
        }
        case 1:
        {
            printf("\nEnter any positive integer to find its FACTORIAL: ");
            scanf("%d", &f);
            if(f <= 0)
                printf("Please enter a positive integer");
            else
            {
                for(i = f; i >= 1; i--)
                    F = F * i;

                printf("The Factorial of your number is %d", F);
            }
        }
    }
}

```

```

    }
    break;
}
case 2:
{
    printf("\nEnter any integer to find if it is a PRIME number: ");
    scanf("%d", &p);
    if(p == 0 || p == 1)
        printf("Invalid Numbers\n");
    else
    {
        while(k <= (p/2))
        {
            if(p%k == 0)
            {
                printf("Number is NOT prime");
                flag++;
                break;
            }
            k++;
        }
    }
    if(flag != 1)
        printf("Number is prime");
    break;
}
case 3:
{

```

```

printf("\nEnter any integer to find if its an ODD or EVEN number: ");
scanf("%d", &N);

if(N % 2 == 0)

printf("The entered intger is EVEN");

else

printf("The entered integer is ODD");

break;

}

```

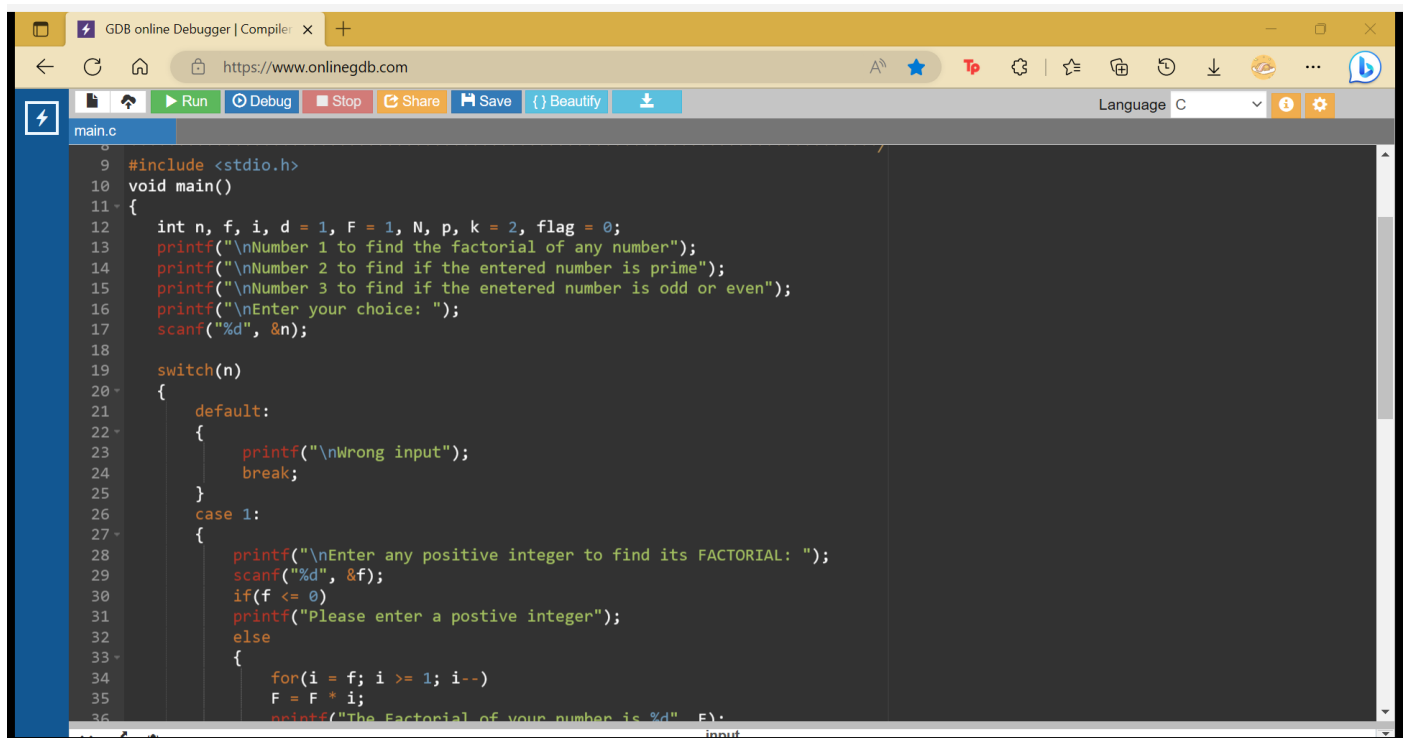
```

}

}

```

SS of the OUTPUT

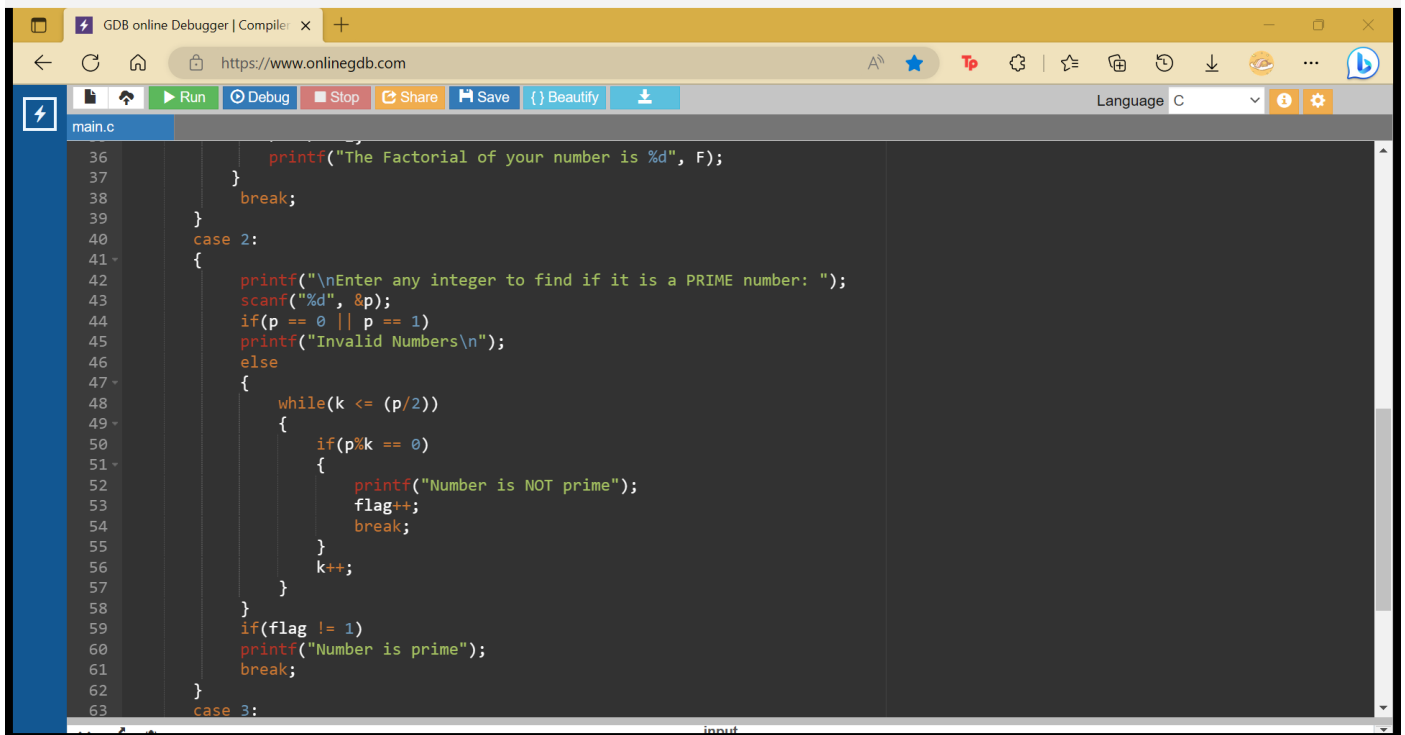


The screenshot shows a web browser window with the URL <https://www.onlinegdb.com>. The page title is "GDB online Debugger | Compiler". The code editor displays the following C code:

```

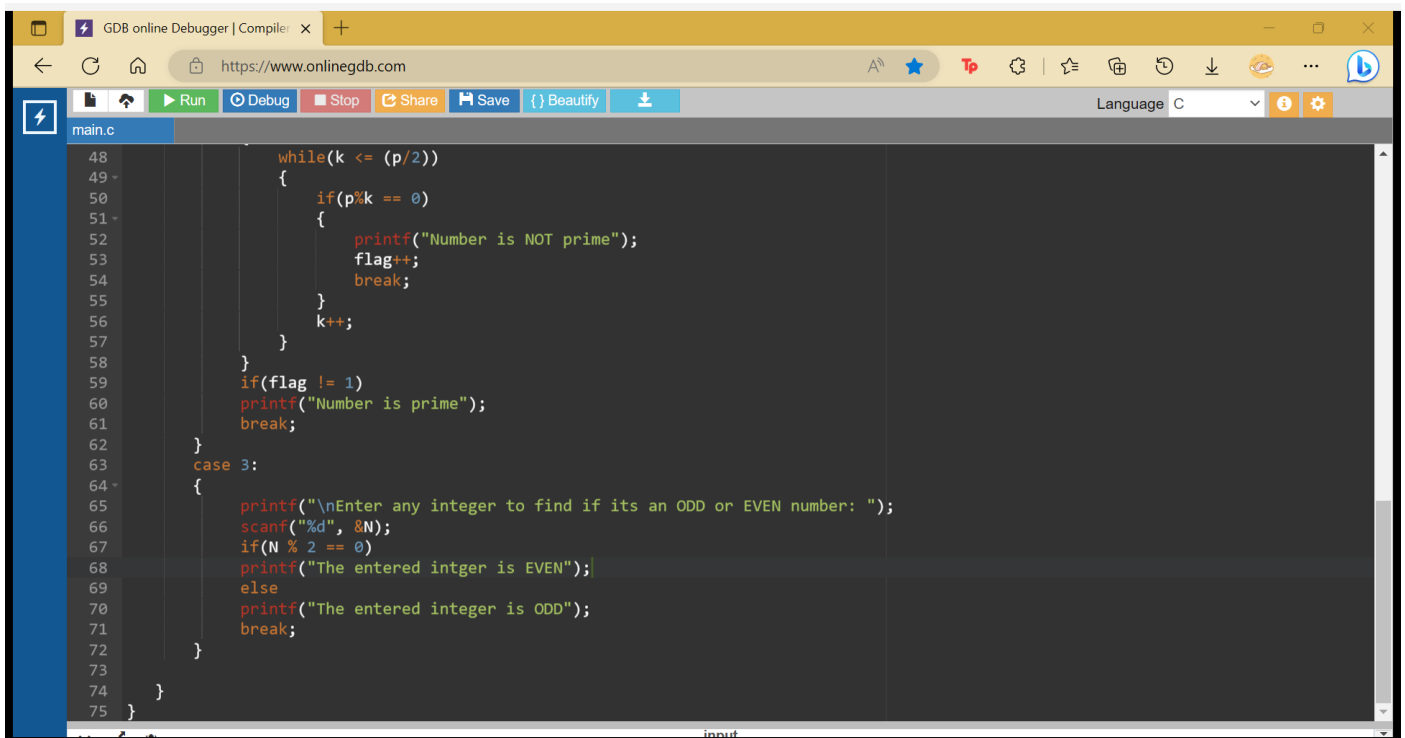
main.c
1  #include <stdio.h>
2
3  void main()
4  {
5      int n, f, i, d = 1, F = 1, N, p, k = 2, flag = 0;
6      printf("\nNumber 1 to find the factorial of any number");
7      printf("\nNumber 2 to find if the entered number is prime");
8      printf("\nNumber 3 to find if the entered number is odd or even");
9      printf("\nEnter your choice: ");
10     scanf("%d", &n);
11
12     switch(n)
13     {
14         default:
15         {
16             printf("\nWrong input");
17             break;
18         }
19         case 1:
20         {
21             printf("\nEnter any positive integer to find its FACTORIAL: ");
22             scanf("%d", &f);
23             if(f <= 0)
24             {
25                 printf("Please enter a postive integer");
26             }
27             else
28             {
29                 for(i = f; i >= 1; i--)
30                 {
31                     F = F * i;
32                 }
33                 printf("The Factorial of your number is %d", F);
34             }
35         }
36     }
37 }

```



The screenshot shows the GDB online Debugger interface with a C program for calculating factorials. The code is as follows:

```
36         printf("The Factorial of your number is %d", F);
37     }
38     break;
39 }
40 case 2:
41 {
42     printf("\nEnter any integer to find if it is a PRIME number: ");
43     scanf("%d", &p);
44     if(p == 0 || p == 1)
45         printf("Invalid Numbers\n");
46     else
47     {
48         while(k <= (p/2))
49         {
50             if(p%k == 0)
51             {
52                 printf("Number is NOT prime");
53                 flag++;
54                 break;
55             }
56             k++;
57         }
58     }
59     if(flag != 1)
60         printf("Number is prime");
61     break;
62 }
63 case 3:
```



The screenshot shows the GDB online Debugger interface with a C program for checking if a number is odd or even. The code is as follows:

```
48     while(k <= (p/2))
49     {
50         if(p%k == 0)
51         {
52             printf("Number is NOT prime");
53             flag++;
54             break;
55         }
56         k++;
57     }
58 }
59 if(flag != 1)
60     printf("Number is prime");
61 break;
62 }
63 case 3:
64 {
65     printf("\nEnter any integer to find if its an ODD or EVEN number: ");
66     scanf("%d", &N);
67     if(N % 2 == 0)
68         printf("The entered integer is EVEN");
69     else
70         printf("The entered integer is ODD");
71     break;
72 }
73 }
74 }
75 }
```


GDB online Debugger | Compiler: X +
https://www.onlinegdb.com

main.c

```
64 {  
65     printf("\nEnter any integer to find if its an ODD or EVEN number: ");  
66     scanf("%d", &N);  
67     if(N % 2 == 0)  
68         printf("The entered integer is EVEN");  
69     else  
70         printf("The entered integer is ODD");  
71     break;  
72 }  
73  
74 }  
75 }
```

input

Number 1 to find the factorial of any number
Number 2 to find if the entered number is prime
Number 3 to find if the entered number is odd or even
Enter your choice: 0

Wrong input

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

GDB online Debugger | Compiler: X +
https://www.onlinegdb.com

main.c

```
64 {  
65     printf("\nEnter any integer to find if its an ODD or EVEN number: ");  
66     scanf("%d", &N);  
67     if(N % 2 == 0)  
68         printf("The entered integer is EVEN");  
69     else  
70         printf("The entered integer is ODD");  
71     break;  
72 }  
73  
74 }  
75 }
```

input

Number 1 to find the factorial of any number
Number 2 to find if the entered number is prime
Number 3 to find if the entered number is odd or even
Enter your choice: 1

Enter any positive integer to find its FACTORIAL: 4
The Factorial of your number is 24

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

The screenshot shows the GDB online Debugger interface. The top bar includes navigation icons and the URL <https://www.onlinegdb.com>. The left sidebar has icons for Run, Debug, Stop, Share, Save, and Beautify. The main editor displays the source code of `main.c` with line numbers 64 to 75. The code prompts the user to enter an integer to check if it is odd or even. The console output shows the program's execution for choice 1, where the user enters -2, and the program prints "The entered integer is ODD". The program finishes with exit code 0.

```
main.c
64 {
65     printf("\nEnter any integer to find if its an ODD or EVEN number: ");
66     scanf("%d", &N);
67     if(N % 2 == 0)
68         printf("The entered integer is EVEN");
69     else
70         printf("The entered integer is ODD");
71     break;
72 }
73
74 }
75 }
```

input

Number 1 to find the factorial of any number
Number 2 to find if the entered number is prime
Number 3 to find if the entered number is odd or even
Enter your choice: 1

Enter any positive integer to find its FACTORIAL: -2
Please enter a postive integer

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

The screenshot shows the GDB online Debugger interface. The top bar includes navigation icons and the URL <https://www.onlinegdb.com>. The left sidebar has icons for Run, Debug, Stop, Share, Save, and Beautify. The main editor displays the source code of `main.c` with line numbers 64 to 75. The code prompts the user to enter an integer to check if it is odd or even. The console output shows the program's execution for choice 2, where the user enters 3, and the program prints "Number is prime". The program finishes with exit code 0.

```
main.c
64 {
65     printf("\nEnter any integer to find if its an ODD or EVEN number: ");
66     scanf("%d", &N);
67     if(N % 2 == 0)
68         printf("The entered integer is EVEN");
69     else
70         printf("The entered integer is ODD");
71     break;
72 }
73
74 }
75 }
```

input

Number 1 to find the factorial of any number
Number 2 to find if the entered number is prime
Number 3 to find if the entered number is odd or even
Enter your choice: 2

Enter any integer to find if it is a PRIME number: 3
Number is prime

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

GDB online Debugger | Compiler: X +
https://www.onlinegdb.com

main.c

```
64 {  
65     printf("\nEnter any integer to find if its an ODD or EVEN number: ");  
66     scanf("%d", &N);  
67     if(N % 2 == 0)  
68         printf("The entered integer is EVEN");  
69     else  
70         printf("The entered integer is ODD");  
71     break;  
72 }  
73  
74 }  
75 }
```

input

Number 1 to find the factorial of any number
Number 2 to find if the entered number is prime
Number 3 to find if the entered number is odd or even
Enter your choice: 2

Enter any integer to find if it is a PRIME number: 4
Number is NOT prime

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

GDB online Debugger | Compiler: X +
https://www.onlinegdb.com

main.c

```
64 {  
65     printf("\nEnter any integer to find if its an ODD or EVEN number: ");  
66     scanf("%d", &N);  
67     if(N % 2 == 0)  
68         printf("The entered integer is EVEN");  
69     else  
70         printf("The entered integer is ODD");  
71     break;  
72 }  
73  
74 }  
75 }
```

input

Number 1 to find the factorial of any number
Number 2 to find if the entered number is prime
Number 3 to find if the entered number is odd or even
Enter your choice: 3

Enter any integer to find if its an ODD or EVEN number: 3
The entered integer is ODD

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

The screenshot displays the GDB online Debugger interface in a web browser. The top navigation bar includes a 'GDB online Debugger | Compiler' tab and a URL bar showing 'https://www.onlinegdb.com'. Below the navigation bar is a toolbar with buttons for 'Run', 'Debug', 'Stop', 'Share', 'Save', 'Beautify', and a download icon. The main editor area is titled 'main.c' and contains the following C code:

```
64 {  
65     printf("\nEnter any integer to find if its an ODD or EVEN number: ");  
66     scanf("%d", &N);  
67     if(N % 2 == 0)  
68         printf("The entered intger is EVEN");  
69     else  
70         printf("The entered integer is ODD");  
71     break;  
72 }  
73  
74 }  
75 }
```

Below the code editor is a console window titled 'input' showing the program's execution. The output is as follows:

```
Number 1 to find the factorial of any number  
Number 2 to find if the entered number is prime  
Number 3 to find if the entered number is odd or even  
Enter your choice: 3  
  
Enter any integer to find if its an ODD or EVEN number: 4  
The entered intger is EVEN  
  
...Program finished with exit code 0  
Press ENTER to exit console.[]
```