

## **IT161 LAB 9**

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1]

(a)

Aim: Read a year from the user and display whether it is a leap year or not

Software used: Online GDB Compiler and Debugger for C (IDE)

Algorithm :

Step 1: Start

Step 2: Declare integer year and read it from user.

Step 3: if (year > 1752)

if (year is divisible by 4 AND year is divisible by 400 OR year  
is not divisible by 100)

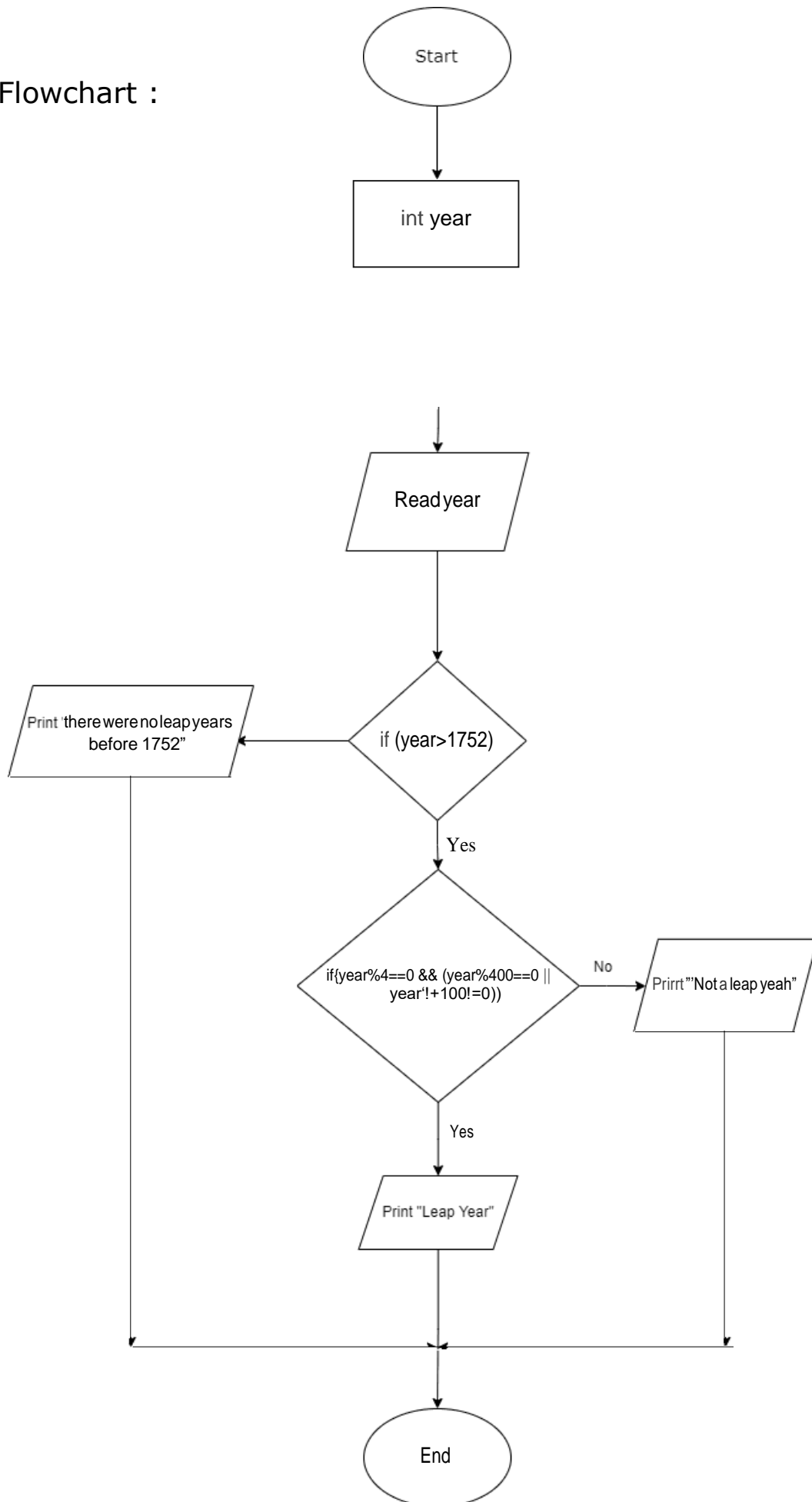
print "Leap year"

else print "Not a leap year"

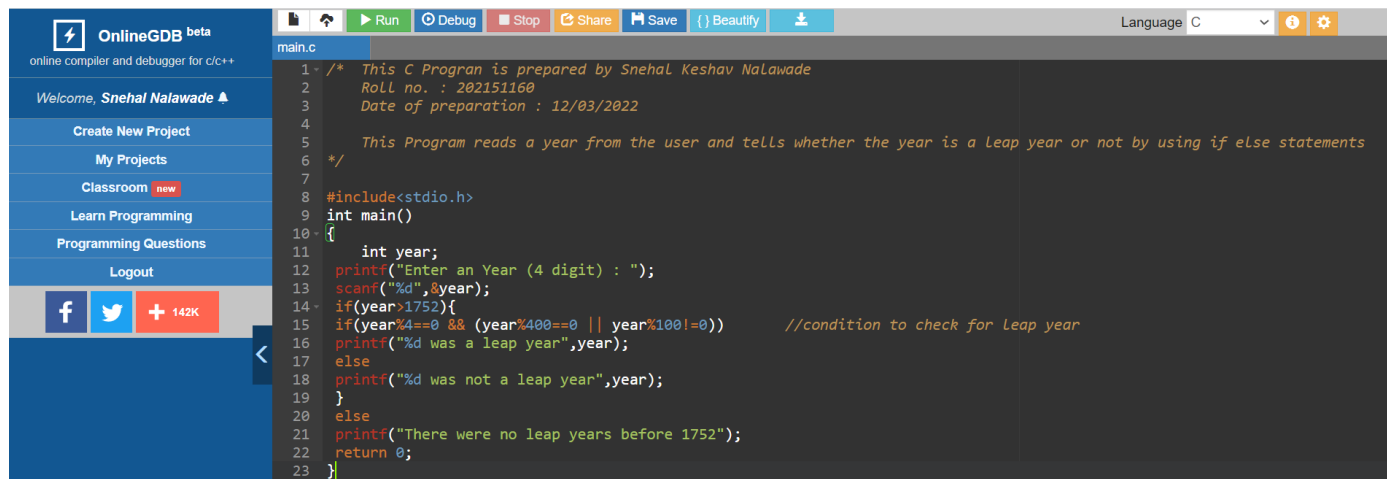
Step 4: else print "There were no leap years before 1752"

Step 5: Stop

Flowchart :



## Code :

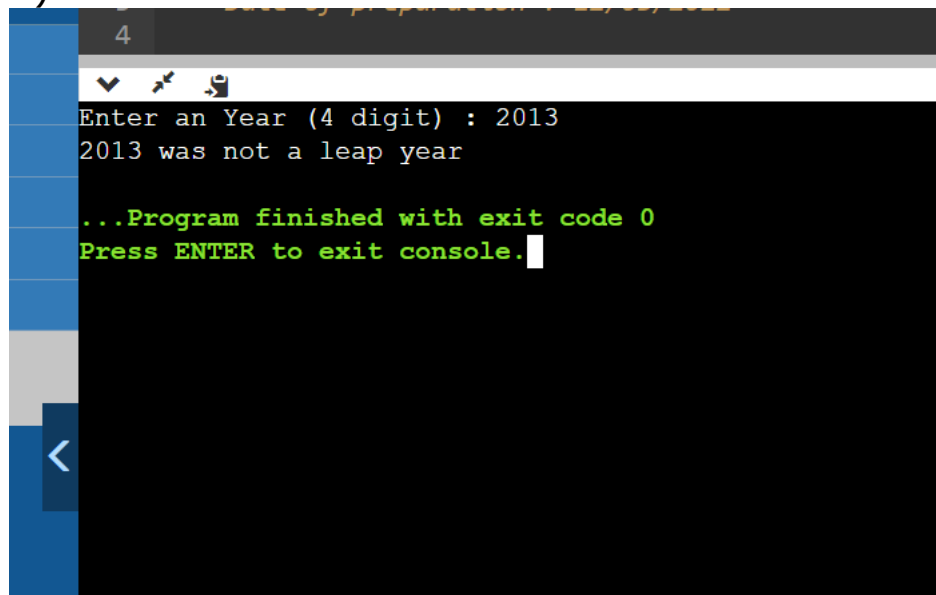


The screenshot shows the OnlineGDB web interface. On the left is a sidebar with navigation links: 'Welcome, Snehal Nalawade', 'Create New Project', 'My Projects', 'Classroom' (with a 'new' badge), 'Learn Programming', 'Programming Questions', and 'Logout'. Below these are social media icons for Facebook and Twitter, and a '+ 142K' badge. The main area has a toolbar with 'Run', 'Debug', 'Stop', 'Share', 'Save', 'Beautify', and a download icon. The language is set to 'C'. The code editor shows a C program named 'main.c' with the following content:

```
1 /* This C Program is prepared by Snehal Keshav Nalawade
2 Roll no. : 202151160
3 Date of preparation : 12/03/2022
4
5 This Program reads a year from the user and tells whether the year is a Leap year or not by using if else statements
6 */
7
8 #include<stdio.h>
9 int main()
10 {
11     int year;
12     printf("Enter an Year (4 digit) : ");
13     scanf("%d",&year);
14     if(year>1752){
15         if(year%4==0 && (year%400==0 || year%100!=0)) //condition to check for Leap year
16             printf("%d was a leap year",year);
17         else
18             printf("%d was not a leap year",year);
19     }
20     else
21         printf("There were no leap years before 1752");
22     return 0;
23 }
```

## Sample output:

1)

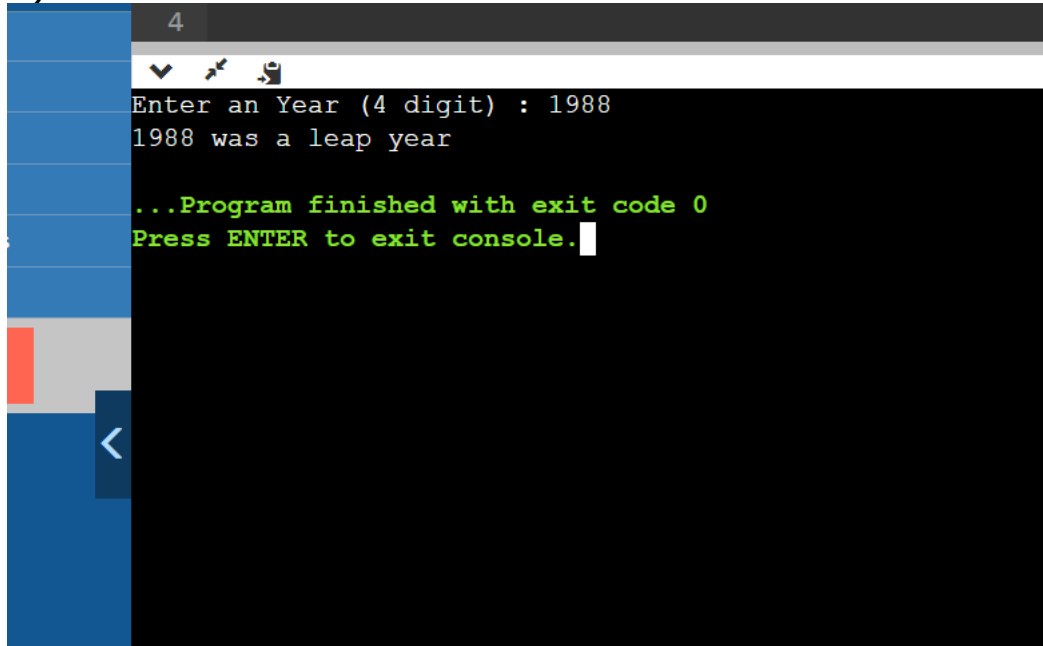


The screenshot shows the output of the program in the OnlineGDB console. The input '4' is shown above the prompt. The output text is as follows:

```
Enter an Year (4 digit) : 2013
2013 was not a leap year

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

2)



```
4
Enter an Year (4 digit) : 1988
1988 was a leap year
...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : The C code has been executed successfully and the desired results are obtained.

(b)

Aim : Convert the above program, to perform the same task, using a **FUNCTION** named as LEAPORNOLEAP

Software used : Online GDB Compiler and Debugger for C (IDE)

Algorithm :

Step 1: Start

Step 2: Create a function LEAPORNOLEAP with void return type an integer parameter if (year > 1752)

if (year is divisible by 4 AND year is divisible by 400 OR year is not divisible by 100)

print "Leap year"

else print "Not a leap year"

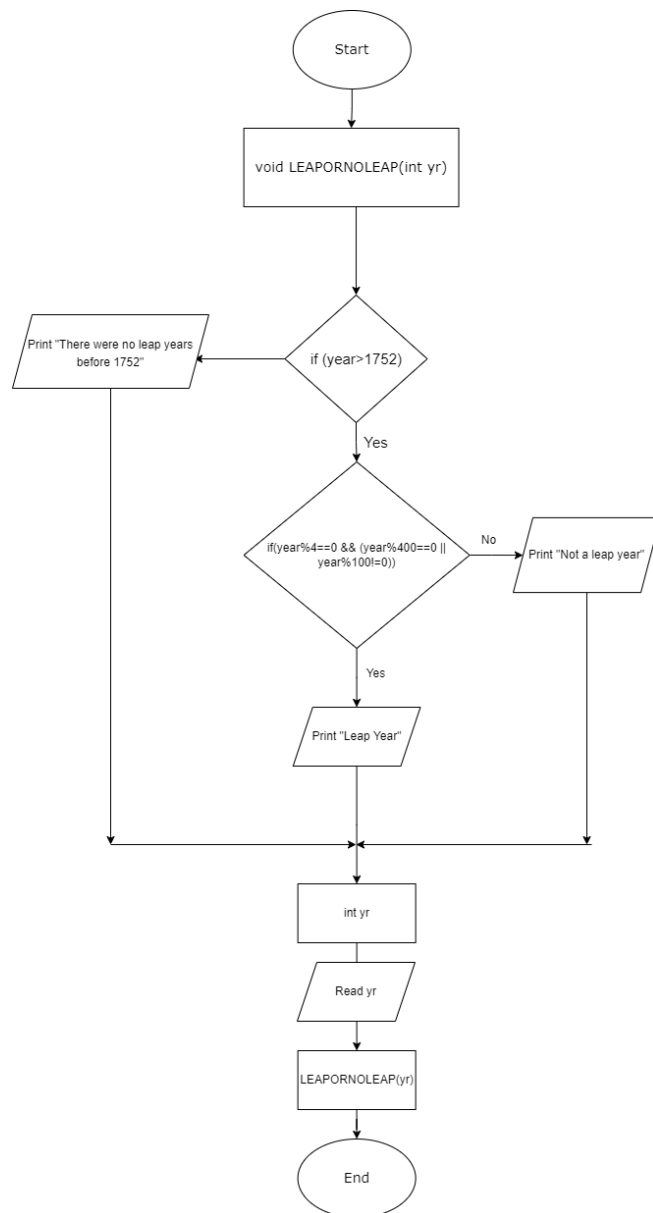
Step 3: else print "There were no leap years before 1752"

Step 4: Declare integer yr in MAIN and read yr from user

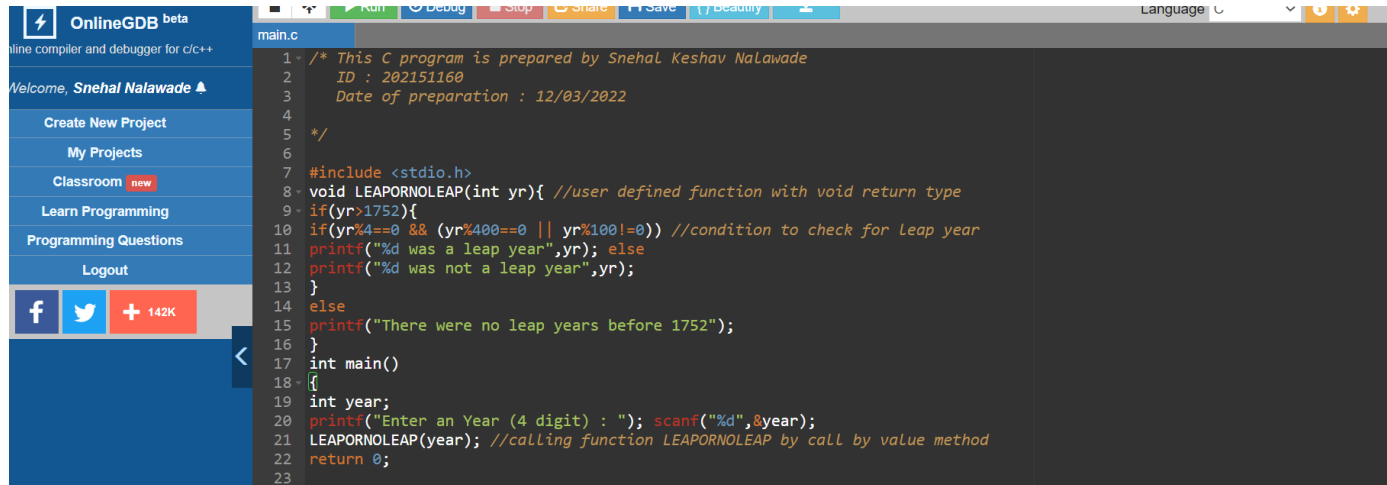
Step 5: Call function LEAPORNOLEAP with argument yr.

Step 6: END

## Flowchart :



## Code:

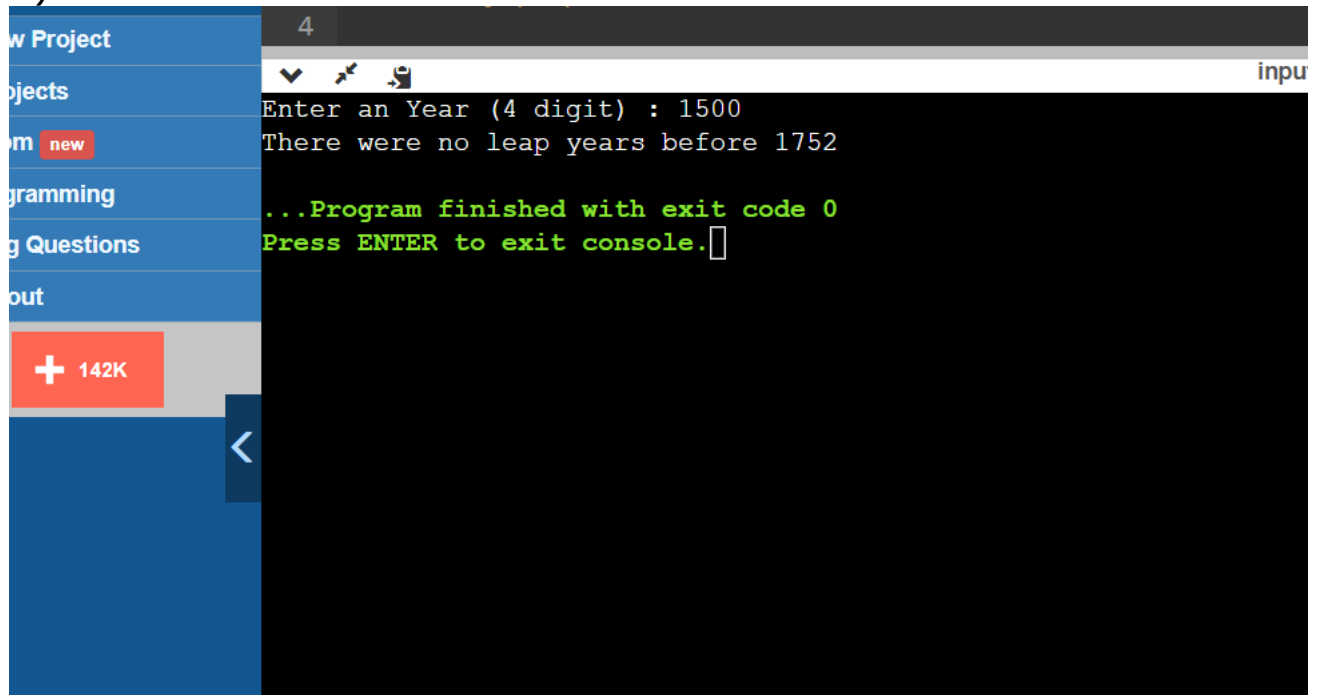


The screenshot shows the OnlineGDB web interface. On the left is a sidebar with navigation links: 'Create New Project', 'My Projects', 'Classroom' (with a 'new' badge), 'Learn Programming', 'Programming Questions', and 'Logout'. Below these are social media icons for Facebook and Twitter, and a '+ 142K' badge. The main area displays a C program in a dark-themed editor. The code is for a leap year checker function named LEAPORNOLEAP. It includes a header comment with the author's name (Snehal Keshav Nalawade), ID (202151160), and date (12/03/2022). The function takes an integer 'yr' and returns void. It checks if the year is greater than 1752. If so, it checks if it's a leap year using the condition (yr%4==0 && (yr%100!=0 || yr%400==0)). If not a leap year, it prints that. Otherwise, it prints that there were no leap years before 1752. The main function prompts the user to enter a 4-digit year and calls the LEAPORNOLEAP function.

```
1  /* This C program is prepared by Snehal Keshav Nalawade
2  ID : 202151160
3  Date of preparation : 12/03/2022
4
5  */
6
7  #include <stdio.h>
8  void LEAPORNOLEAP(int yr){ //user defined function with void return type
9  if(yr>1752){
10 if(yr%4==0 && (yr%100!=0 || yr%400==0)) //condition to check for Leap year
11 printf("%d was a leap year",yr); else
12 printf("%d was not a leap year",yr);
13 }
14 else
15 printf("There were no leap years before 1752");
16 }
17 int main()
18 {
19 int year;
20 printf("Enter an Year (4 digit) : "); scanf("%d",&year);
21 LEAPORNOLEAP(year); //calling function LEAPORNOLEAP by call by value method
22 return 0;
23 }
```

Sample output :

1)



The screenshot shows the console output of the program. The user has entered '1500' as the year. The program outputs 'There were no leap years before 1752'. The console also shows the program finished with exit code 0 and a prompt to press ENTER to exit the console.

```
4
Enter an Year (4 digit) : 1500
There were no leap years before 1752
...Program finished with exit code 0
Press ENTER to exit console.
```

2)

Conclusion : The C code has been executed successfully and the desired results are obtained.

2]

Aim : Write a program to print the pattern C IS BEST, using a user defined function, as shown below.

```

C

i l

s   s

b   b

e   e

s   s
```

# tsebsiCisbest

Software used : Online GDB Compiler and Debugger for C (IDE)

Algorithm :

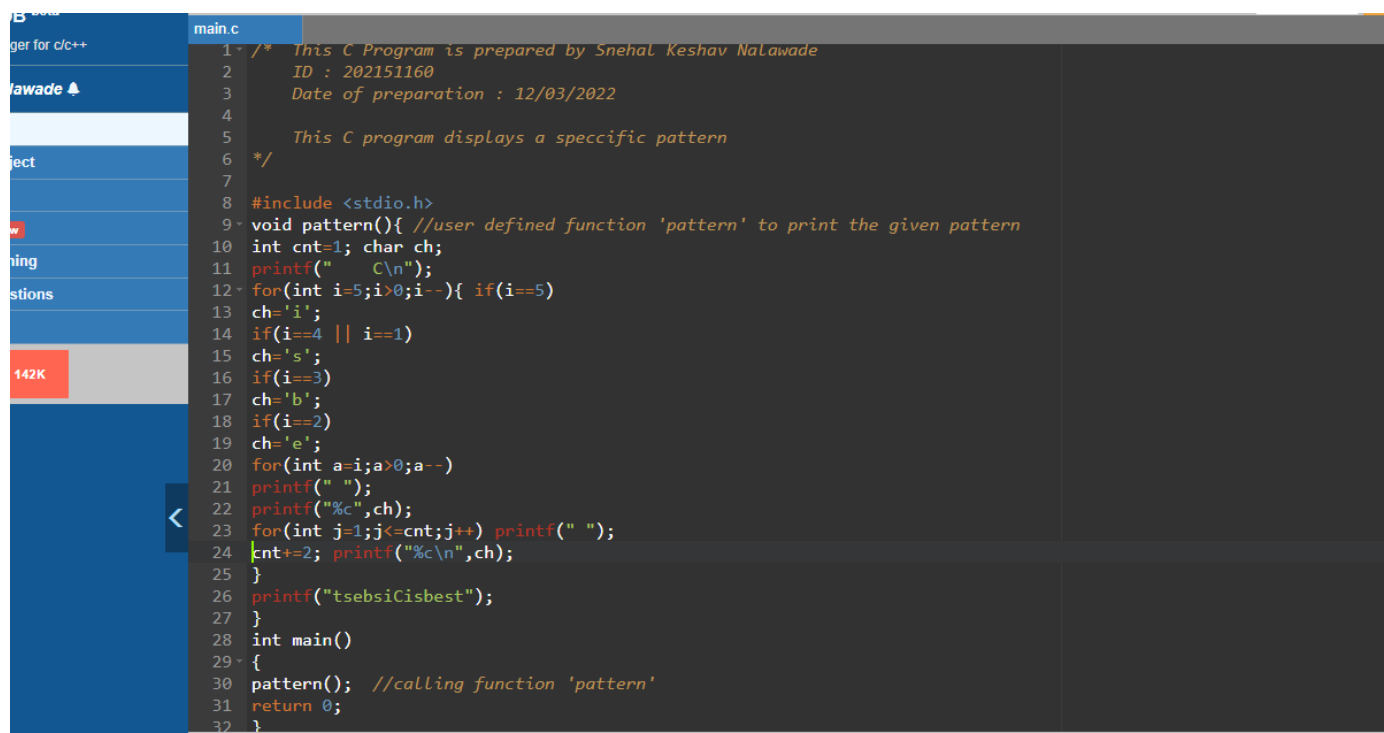
Step 1: Start

Step 2: Create function pattern with void return type and no parameter.

Step 3: Use multiple if-else statements inside for loop to print the desired pattern.

Step 4: END.

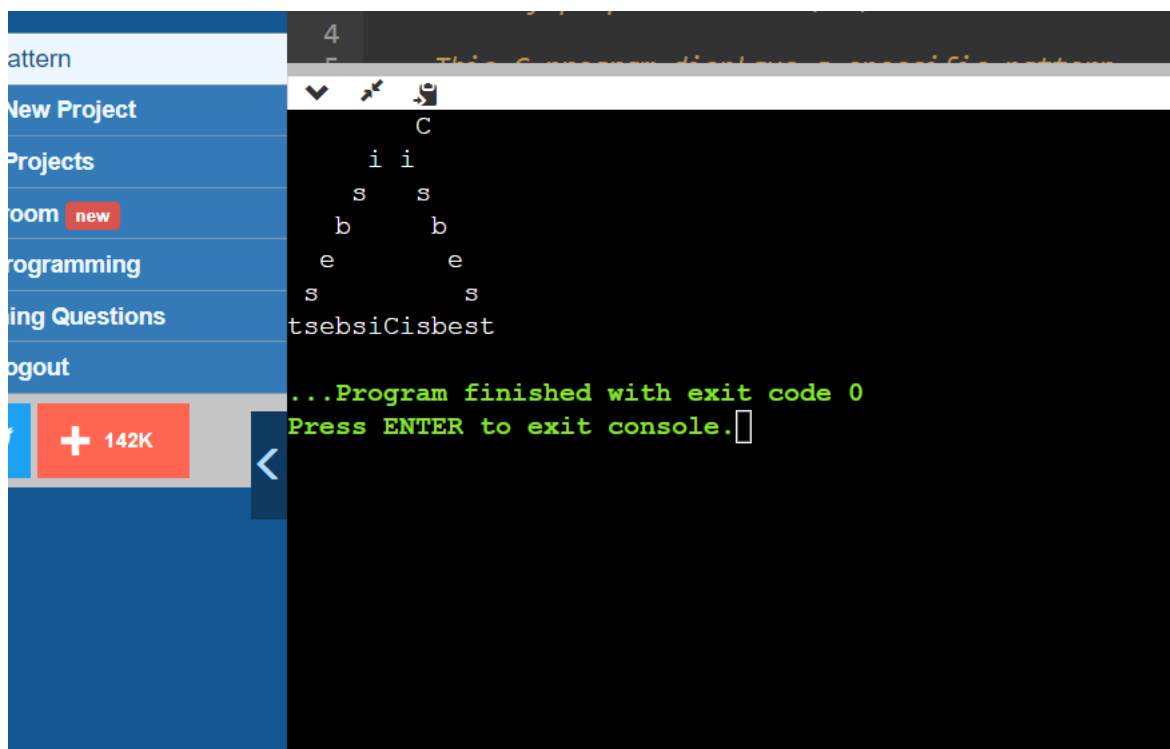
Code :



```
1 /* This C Program is prepared by Snehal Keshav Nalawade
2    ID : 202151160
3    Date of preparation : 12/03/2022
4
5    This C program displays a speccific pattern
6 */
7
8 #include <stdio.h>
9 void pattern(){ //user defined function 'pattern' to print the given pattern
10 int cnt=1; char ch;
11 printf("    C\n");
12 for(int i=5;i>0;i--){ if(i==5)
13     ch='i';
14     if(i==4 || i==1)
15         ch='s';
16     if(i==3)
17         ch='b';
18     if(i==2)
19         ch='e';
20     for(int a=i;a>0;a--)
21         printf(" ");
22     printf("%c",ch);
23     for(int j=1;j<=cnt;j++) printf(" ");
24     cnt+=2; printf("%c\n",ch);
25 }
26 printf("tsebsiCisbest");
27 }
28 int main()
29 {
30     pattern(); //calling function 'pattern'
31     return 0;
32 }
```



Output :



The screenshot shows a web-based IDE interface. On the left is a sidebar with a blue background containing navigation links: 'pattern', 'New Project', 'Projects', 'room' (with a red 'new' badge), 'programming', 'ing Questions', and 'logout'. Below these is a red button with a white plus sign and '142K', and a blue arrow pointing left. The main area on the right has a dark background. At the top, there's a header with '4' and 'This program displays a specific pattern'. Below the header, the C code is displayed in a light green monospace font. The code prints a diamond pattern of 'i' and 's' characters, followed by the string 'tsebsiCisbest'. The output of the program is shown in green text: '...Program finished with exit code 0' and 'Press ENTER to exit console.' followed by a cursor.

```
C
i i
s s
b b
e e
s s
tsebsiCisbest

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

Conclusion : The C code has been executed successfully and the desired results are obtained.

**Thank you**

