

IT 161_Lab9

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Date: 07/03/2022

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Experiment 1(a): To create a C program to read a year(4 digit integer) and check whether the given year is a leap year or not.

Software: Online compiler and debugger for C.

Methodology:

Step1: If($Y > 9999$) print invalid year.

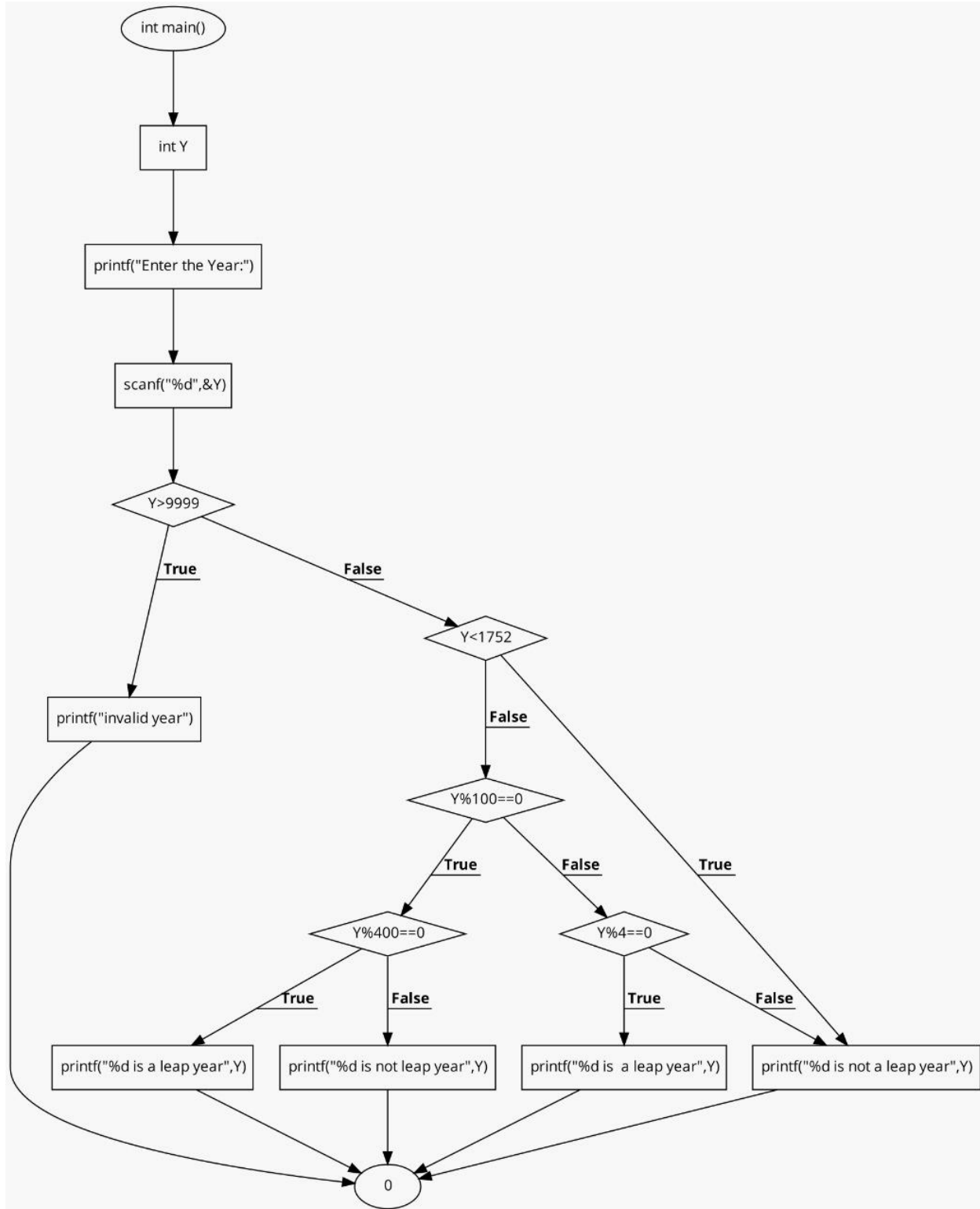
Step2: Else if($Y < 1752$) This is not leap year.

Step3: Else if ($Y \% 100 == 0$) check if it is multiple of 100 if it yes, then if($Y \% 400 == 0$) satisfy print it is leap year. Else it is not leap year.

Step4: Else if($Y \% 4 == 0$) by this we check it is divisible by 4 then it is leap year.

Step5: Else in all conditions it is not leap year.

FLOWCHART:




CODE:

```
#include <stdio.h>
int main()
{
    int Y;
    printf("Enter the Year:");
    scanf("%d",&Y);
    if(Y>9999){
        printf("invalid year");
    }else if(Y<1752){
        printf("%d is not a leap year",Y);
    }else if (Y%100==0){
        if(Y%400==0)
            printf("%d is a leap year",Y);
        else printf("%d is not leap year",Y);
    }else if(Y%4==0){
        printf("%d is a leap year",Y);
    }else{
        printf("%d is not a leap year",Y);
    }
    return 0;
}
```

A screenshot of a code editor window titled 'main.c'. The editor has a toolbar at the top with icons for Run, Debug, Stop, Share, Save, and Beautify. The language is set to 'C'. The code in the editor is identical to the one shown in the previous block, with line numbers 1 through 25 on the left margin. The code checks for invalid years, years before 1752, and leap year rules (divisible by 4 but not 100, or divisible by 400).


```
1  /*Name:Dipean Dasgupta Roll:202151188 Lab 9*/
2  #include <stdio.h>
3
4  int main()
5  {
6      int Y;
7      printf("Enter the Year:");
8      scanf("%d",&Y);
9
10     if(Y>9999){
11         printf("invalid year");
12     }else if(Y<1752){
13         printf("%d is not a leap year",Y);
14     }else if (Y%100==0){
15         if(Y%400==0)
16             printf("%d is a leap year",Y);
17         else printf("%d is not leap year",Y);
18     }else if(Y%4==0){
19         printf("%d is a leap year",Y);
20     }else{
21         printf("%d is not a leap year",Y);
22     }
23     return 0;
24 }
25
```

RESULT:




```
Enter the Year:1800
1800 is not leap year

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




```
Enter the Year:1908
1908 is a leap year

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



```
Enter the Year:1652
1652 is not a leap year

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



```
Enter the Year:16452
invalid year

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

Experiment 1(b): To create a C program to read a year(4 digit integer) using function LEAPORNOLEAP() and check whether the given year is a leap year or not.

Software: Online compiler and debugger for C.

Methodology:

Step1: Define integers a , Take input a.

Step2: if(a>9999) Invalid year.

Step3: else if(a<1752) it is not leap year according to question theme.

Step4: LEAPORNOLEAP(a) we call this function,it will check is it leap year or not and return 1 if it is and 0 if it is not.

CODE:

```
#include <stdio.h>
int LEAPORNOLEAP(int X){

    if (X%100==0){
        if(X%400==0)
            return 1;
        else
            return 0;
    }else if(X%4==0){
        return 1;
    }else{
        return 0;
    }
}

int main()
{
    int Y;
    printf("Enter the Year:");
    scanf("%d",&Y);
    if(Y>9999){
        printf("invalid year");
    }else if(Y<1752){
        printf("%d is not a leap year",Y);
    }else{
        if ( LEAPORNOLEAP(Y)==1){
            printf("Leap year");
        }else if(LEAPORNOLEAP(Y)==0){
            printf("Not leap year");
        }
    }
    return 0;
}
```

```
main.c
1  /*Name:Dipean Dasgupta Roll:202151188 Lab 9 experiment 2*/
2  #include <stdio.h>
3  int LEAPORNOLEAP(int X){
4
5      if (X%100==0){
6          if(X%400==0)
7              return 1;
8          else
9              return 0;
10     }else if(X%4==0){
11         return 1;
12     }else{
13         return 0;
14     }
15 }
16
17 int main()
18 {
19     int Y;
20     printf("Enter the Year:");
21     scanf("%d",&Y);
22     if(Y>9999){
23         printf("invalid year");
24     }else if(Y<1752){
25         printf("%d is not a leap year",Y);
26     }else{
27         if ( LEAPORNOLEAP(Y)==1){
28             printf("Leap year");
29         }else if(LEAPORNOLEAP(Y)==0){
30             printf("Not leap year");
31         }
32     }
33     return 0;
34 }
35
```

Result:

```
Enter the Year:2000
Leap year

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

```
Enter the Year:1918
Not leap year

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

Experiment 3: To create a C program to print the pattern CISBEST.

Software: VS CODE and gcc compiler.

Algorithm:

Step1: Define integers i,j,rows.

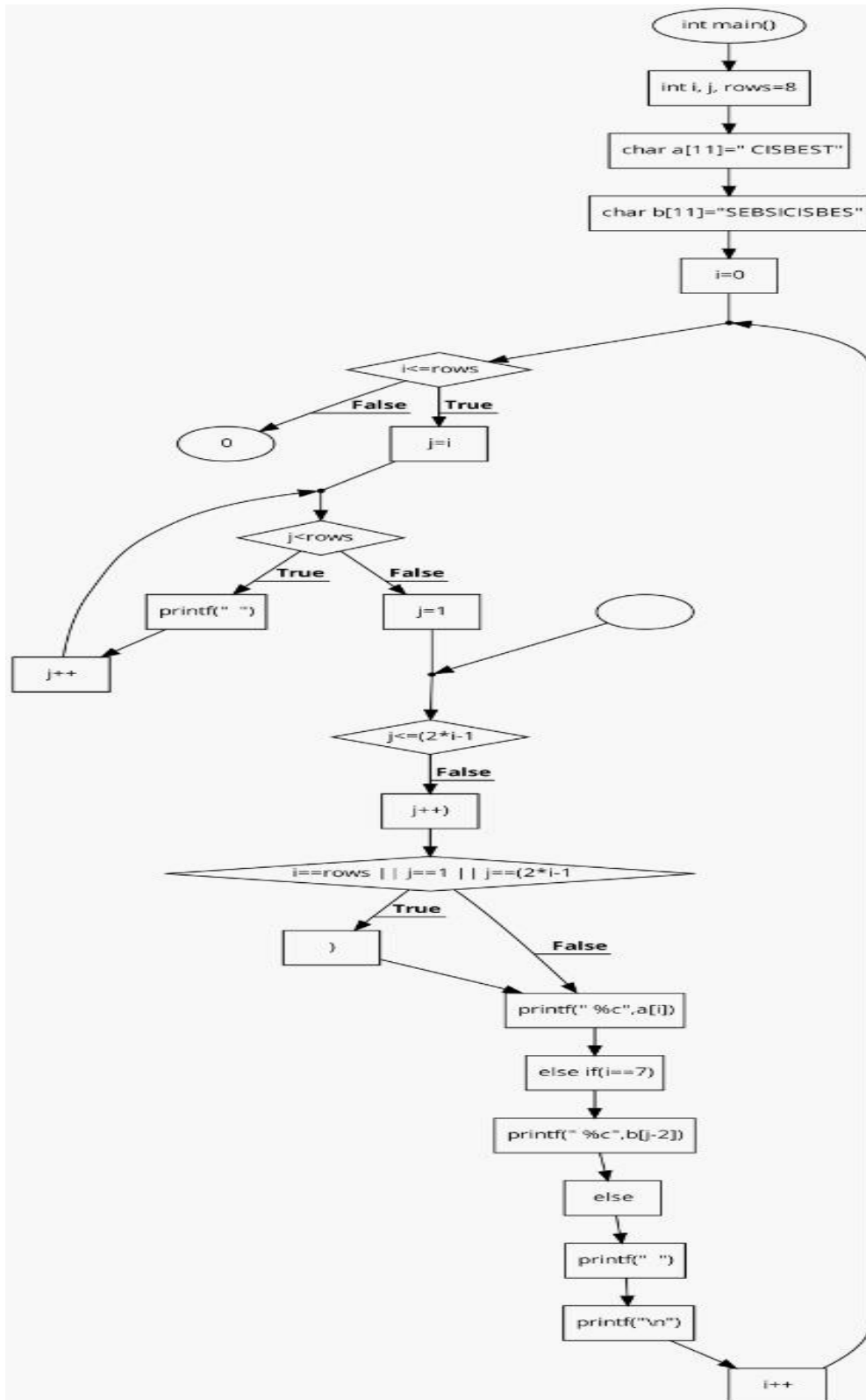
Step2: Define char string array of “ CISBEST”

Step3: for(i=0; i<=rows; i++) this will use to print number of rows.

Step4: for(j=i; j<rows; j++) this will use to print spaces.

Step5: for(j=1; j<=(2*i-1); j++) This will use to print Char.

FLOWCHART:



CODE:

```
#include <stdio.h>
int main()
{
    int i, j, rows=8;
    char a[11]=" Cisbest";
    char b[11]="sebsiCisbes";
    for(i=0; i<=rows; i++)
    {
        for(j=i; j<rows; j++)
        {
            printf(" ");
        }

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

            if(i==rows || j==1 || j==(2*i-1))
            {
                printf(" %c",a[i]);
            }
            else if(i==7){
                printf(" %c",b[j-2]);
            }
            else{
                printf(" ");
            }
        }
        printf("\n");
    }
    return 0;
}
```

```

#include <stdio.h>
int main()
{
    int i, j, rows=8;
    char a[11]=" Cisbest";
    char b[11]="sebsiCisbes";
    for(i=0; i<=rows; i++)
    {
        for(j=i; j<rows; j++)
        {
            printf(" ");
        }
        for(j=1; j<=(2*i-1); j++){

            if(i==rows || j==1 || j==(2*i-1))
            {
                printf(" %c",a[i]);
            }
            else if(i==7){
                printf(" %c",b[j-2]);
            }
            else{
                printf(" ");
            }
        }
        printf("\n");
    }
    return 0;
}

```

RESULT:

PROBLEMS	OUTPUT	DEBUG CONSOLE	TERMINAL
			<pre> C i i s s b b e e s s t s e b s i C i s b e s t </pre>

