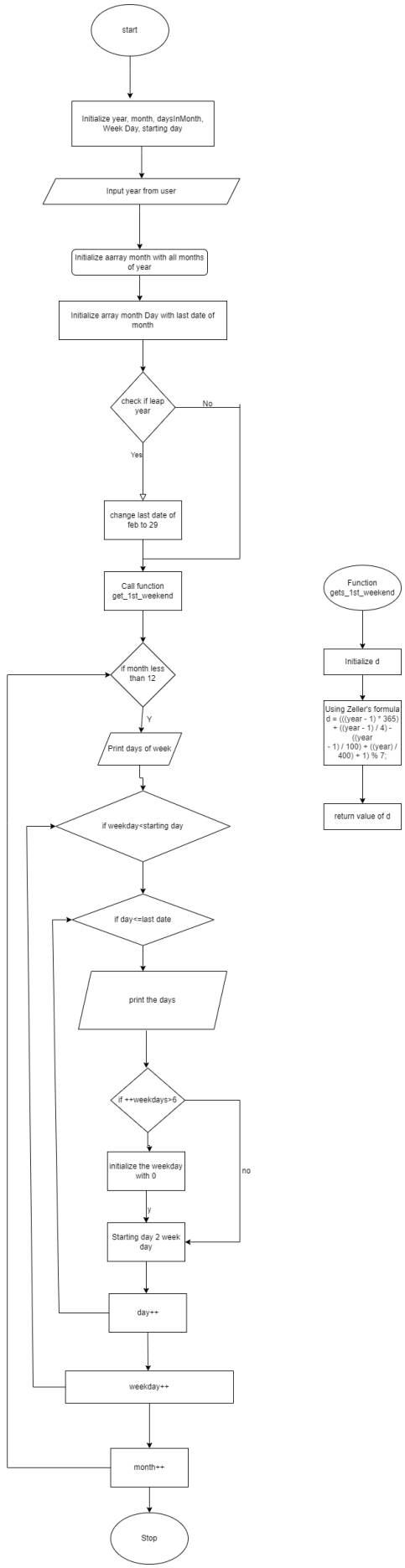
Objective: To generate the calendar of a given year.

Problem definition: The code written is about calendars. We will be using C language for the same. When the user enters a particular year, the code is executed and the selected years calendar is shown on the output screen. The logic used is Zeller's algorithm.

Algorithm:

1. Start
2. Creating a function of the int return type- get_1st_weekday
3. Initializing d
4. Use Zeller Algorithm d=(((year-1) *365) +((year-1)/4) -((year-1)/100) +((year)/400) +1) %7
5. Return value of d
6. Start main function
7. Initialize year, month, day, daysInMonth, weekday=0, startingDay
8. Print "enter your desired year:"
9. Input the value of the year from the user.
10. Initialize array with 12 months of the year.
11. Initialize array with the last dates of the all the months
12. Check if leap year or not
13. If condition Is true initialise last date of February with 29
14. Call function get_1st_weekday and store value in startingday
15. Start a for loop with months as the counter variable as long as it is less than 12
16. Store no of days in that month in daysInMonth using array
17. Print the weeks of the day
18. Start a for loop with weeks in a month as long as it is less than starting day
19. Start a for loop with days in Month starting from 1 to last date as stores in array
20. Display the dates
21. If weekday more tha 6 initialise week day as zero
22. Initialise weekday as starting day and continue the process till all the for loops end.

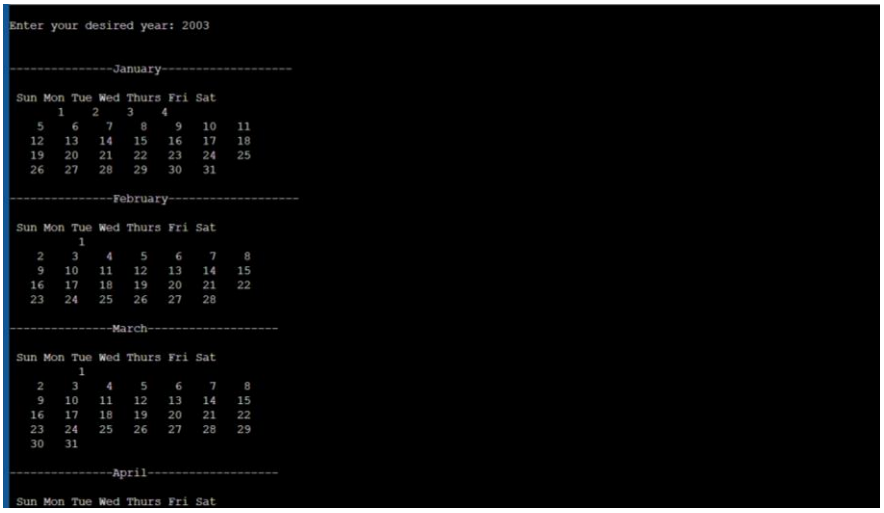
Flowchart:


start
Initialize year, month, daysInMonth, Week Day, starting day
Input year from user
Initialize aarray month with all months of year
Initialize array month Day with last date of month
check if leap year
No
Yes
change last date of feb to 29
Call function get_1st_weekend
if month less than 12
Y
Print days of week
if weekday<starting day
if day<=last date
print the days
if ++weekdays>6
initialize the weekday with 0
no
y
Starting day 2 week day
day++
weekday++
month++
Stop
Function gets_1st_weekend
Initialize d
Using Zeller's formula d = (((year - 1) * 365) + ((year - 1) / 4) - ((year - 1) / 100) + ((year) / 400) + 1) % 7;
return value of d

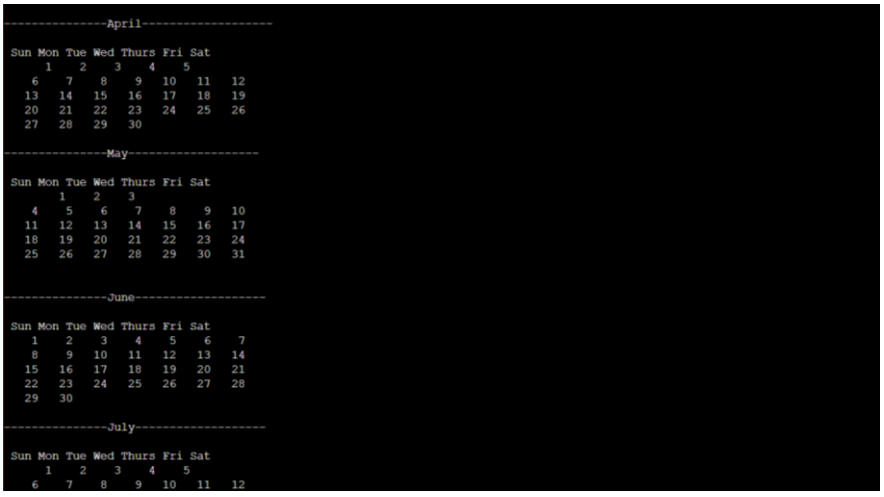
Code:

```
#include <stdio.h>
#include <stdlib.h>
int get_1st_weekday(int year)
{
int d;
//using Zeller's Algorithm
d = (((year - 1) * 365) + ((year - 1) / 4) - ((year - 1) / 100) + ((year) / 400) + 1) % 7;
return d;
}
int main()
{
int year,month,day,daysInMonth,weekDay=0,startingDay;
printf("\nEnter your desired year: ");
scanf("%d",&year);

char
*months[]={"January","February","March","April","May","June","July","August","September","Octob
er","November","December"};
int monthDay[]={31,28,31,30,31,30,31,31,30,31,30,31};

if((year%4==0&&year%100!=0)||year%400==0)
monthDay[1]=29;
startingDay=get_1st_weekday(year);
for(month=0;month<12;month++)
{
daysInMonth=monthDay[month];
printf("\n\n----------%s----------\n",months[month]);
printf("\n Sun Mon Tue Wed Thurs Fri Sat\n");
for(weekDay=0;weekDay<startingDay;weekDay++)
printf(" ");
for(day=1;day<=daysInMonth; day++)
{
printf("%5d",day);
if(++weekDay>6)
{
printf("\n");
weekDay=0;
}
startingDay=weekDay;
}
}
}
```

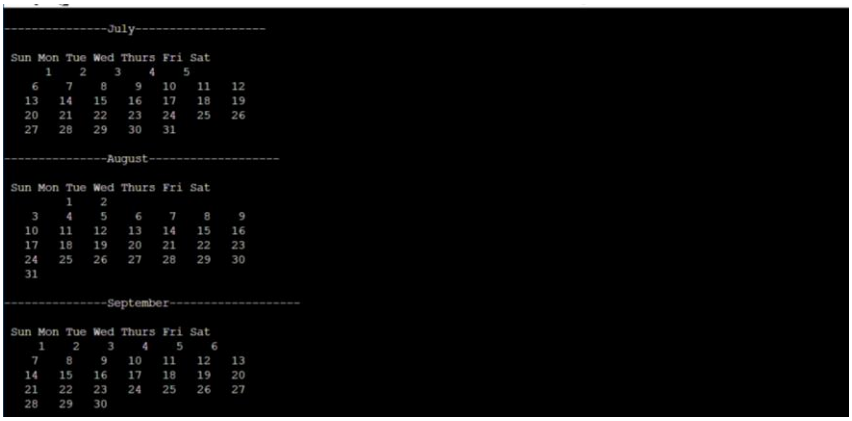
Output:



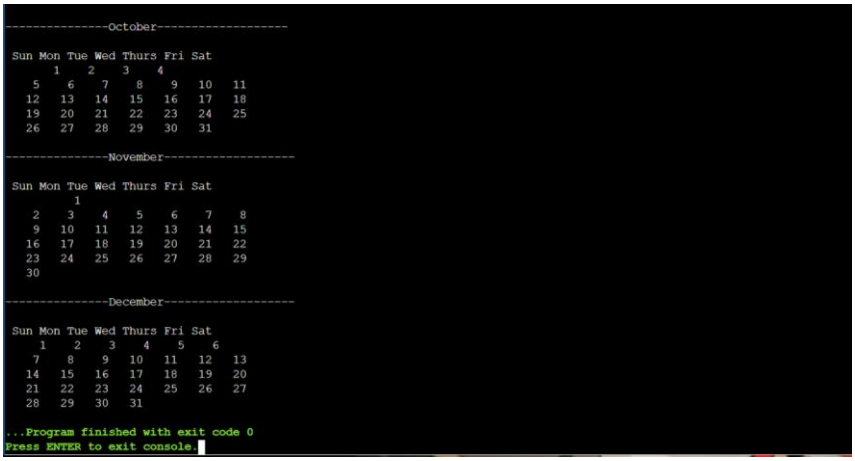
```
Enter your desired year: 2003


---------------January-------------------

 Sun Mon Tue Wed Thurs Fri Sat
       1   2   3   4
   5   6   7   8   9  10  11
  12  13  14  15  16  17  18
  19  20  21  22  23  24  25
  26  27  28  29  30  31

---------------February------------------

 Sun Mon Tue Wed Thurs Fri Sat
           1
   2   3   4   5   6   7   8
   9  10  11  12  13  14  15
  16  17  18  19  20  21  22
  23  24  25  26  27  28

---------------March-------------------

 Sun Mon Tue Wed Thurs Fri Sat
           1
   2   3   4   5   6   7   8
   9  10  11  12  13  14  15
  16  17  18  19  20  21  22
  23  24  25  26  27  28  29
  30  31

---------------April-------------------

 Sun Mon Tue Wed Thurs Fri Sat
```



```
---------------April-------------------

 Sun Mon Tue Wed Thurs Fri Sat
       1   2   3   4   5
   6   7   8   9  10  11  12
  13  14  15  16  17  18  19
  20  21  22  23  24  25  26
  27  28  29  30

---------------May-------------------

 Sun Mon Tue Wed Thurs Fri Sat
           1   2   3
   4   5   6   7   8   9  10
  11  12  13  14  15  16  17
  18  19  20  21  22  23  24
  25  26  27  28  29  30  31


---------------June-------------------

 Sun Mon Tue Wed Thurs Fri Sat
   1   2   3   4   5   6   7
   8   9  10  11  12  13  14
  15  16  17  18  19  20  21
  22  23  24  25  26  27  28
  29  30

---------------July-------------------

 Sun Mon Tue Wed Thurs Fri Sat
       1   2   3   4   5
   6   7   8   9  10  11  12
```



```
---------------July-------------------

 Sun Mon Tue Wed Thurs Fri Sat
       1   2   3   4   5
   6   7   8   9  10  11  12
  13  14  15  16  17  18  19
  20  21  22  23  24  25  26
  27  28  29  30  31

---------------August-------------------

 Sun Mon Tue Wed Thurs Fri Sat
           1   2
   3   4   5   6   7   8   9
  10  11  12  13  14  15  16
  17  18  19  20  21  22  23
  24  25  26  27  28  29  30
  31

---------------September-------------------

 Sun Mon Tue Wed Thurs Fri Sat
       1   2   3   4   5   6
   7   8   9  10  11  12  13
  14  15  16  17  18  19  20
  21  22  23  24  25  26  27
  28  29  30
```


----------October----------
Sun Mon Tue Wed Thurs Fri Sat
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31
----------November----------
Sun Mon Tue Wed Thurs Fri Sat
1
2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30
----------December----------
Sun Mon Tue Wed Thurs Fri Sat
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31
...Program finished with exit code 0
Press ENTER to exit console.