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CALENDAR









THE GAME OF DAYS GR. NO. 46.



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ACKNOWLEDGEMENT

We would like to express our sincere gratitude to our Computer Science professor Mr. Bhanu Murthy for letting us take upon this project and providing us with valuable guidance throughout our project – THE GAME OF DAYS. We would also like to thank our friends and family for their endless support without which we could not have completed this work on time.

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About \rightarrow The game of days

This is a project we made involving the days of the year

One of the options helps us to print the calendar of a desired month of the specified year.

While another helps us to find out the day on any specified date.





Brief explanation: -

- For the generating the calendar, we take the reference of Gregorian calendar as its 1st January is Monday.
- ▶ January has $31 = 7 \times 4 + 3$ days, so 1 February (7*4) will fall on the day which follows three days after 1 January . Similarly, 1 March (7*4+3) will fall on the day three days after the day corresponding to January 1, April 1 will fall 6 days after, and so on.

```
Thus, the first days of each month are offset with respect to 1 January by the array \{0, 3, 3, 6, 1, 4, 6, 2, 5, 0, 3, 5\}. After this array the calculation would be like that: - int days (int y, int m, int d) \{ static int t [] = \{0, 3, 3, 6, 1, 4, 6, 2, 5, 0, 3, 5\}; return \{y + t[m-1] + d\} % 7;
```

Where, d is the day of the given month(m) and y is the difference of the given year with the Gregorian year which is same as the input year.

- ➤ But this calculation is incomplete as there is no contribution of the leap year.
- In a simple year there are 365(7*52 + 1) days and this one day will change the day of the particular date

for example: if the day of 14th July, 2015 is Monday then there will be Tuesday on 14th July, 2016 and we have to find these extra number of days which is equal to the difference of the given year with the reference year

 \triangleright But, if we see a leap year there are 366(7*52+2) days and they will add up an extra day after every 4 years.

So, we have to find the number of leap days also.

For this, we have to do a calculation which is: y/4 - y/100 + y/400

And this calculation will add up number of leap day in the difference of the given year in the reference year

(as the y/4 will give the number of leap years from the reference year to the given year but it will add up the non-leap years of century also so we have to subtract y/100 and this action we eliminate the leap years which are divisible by 400 so we have to add y/400)

- ➤ In a leap the extra will add up after the month of February so to perform the same algorithm of the month of the February and January we will subtract 1 from the given year (y -= m < 3) but We are subtracting 1 from the year for January and February for non-leap years too.
- This means that there would be a "blank" day between February 28 and March 1, that is, we have made every non-leap year a leap year, and leap years double-leap years.

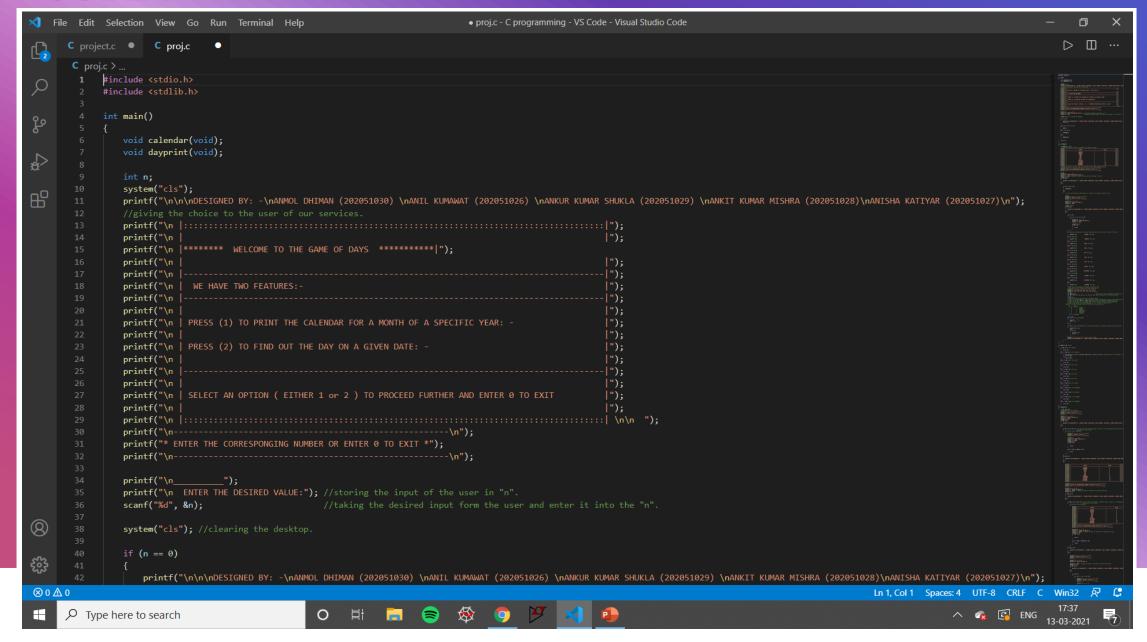
- ➤ If we subtract 1 from the t [] values of every month after February, that would fill the gap, and the leap year problem is solved.
- That is, we need to make the following changes: t [] now becomes {0, 3, 2, 5, 0, 3, 5, 1, 4, 6, 2, 4}

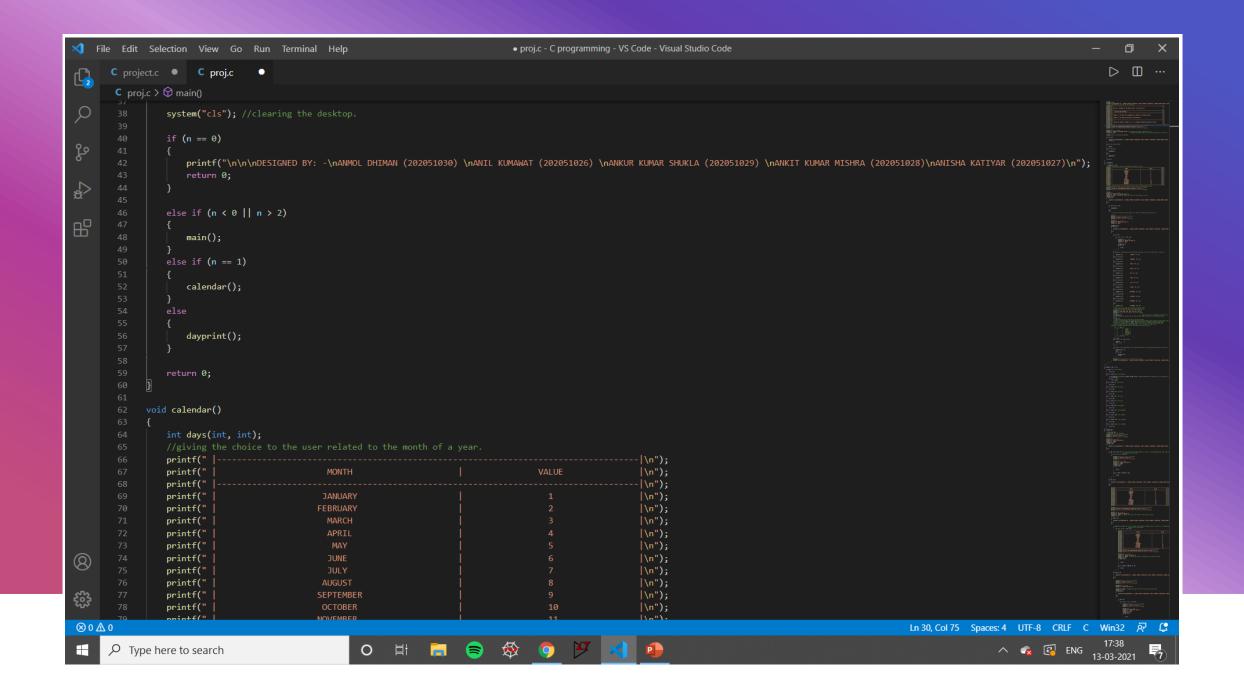
```
> So our full solution would be:
```

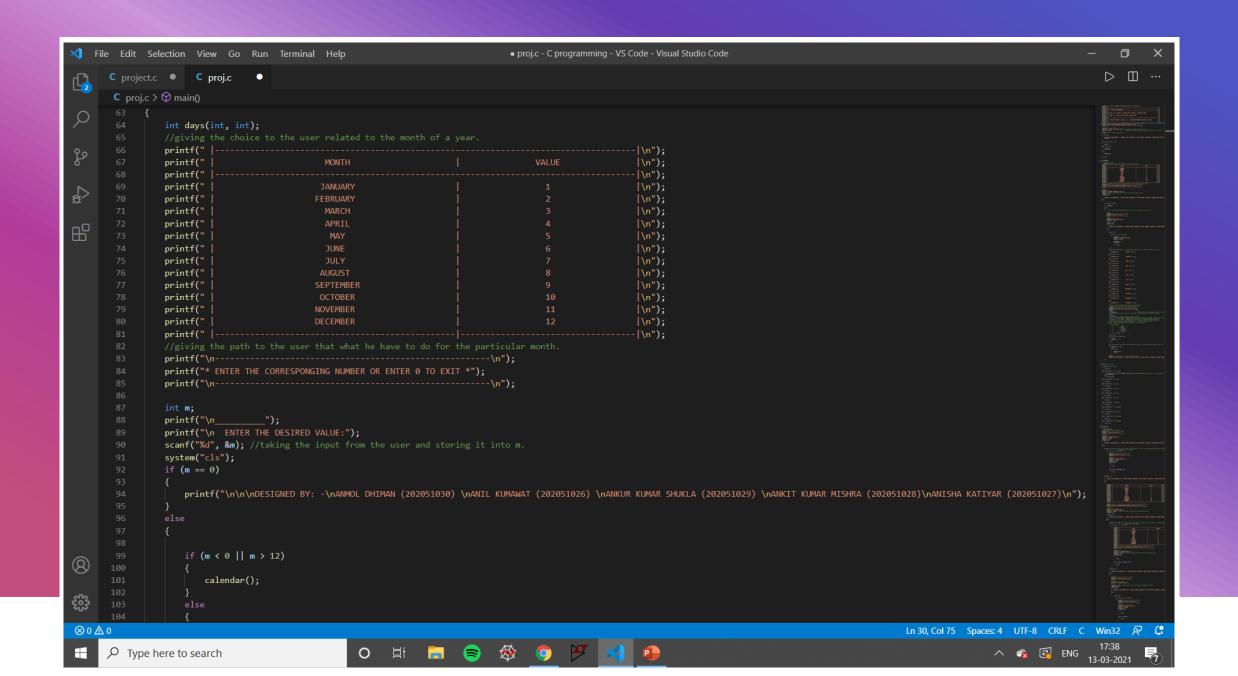
```
int days (int y, int m, int d) 
{ static int t [] = \{0, 3, 2, 5, 0, 3, 5, 1, 4, 6, 2, 4\}; 
y -= m < 3; 
return (y + y/4 - y/100 + y/400 + t[m-1] + d) \% 7;
```

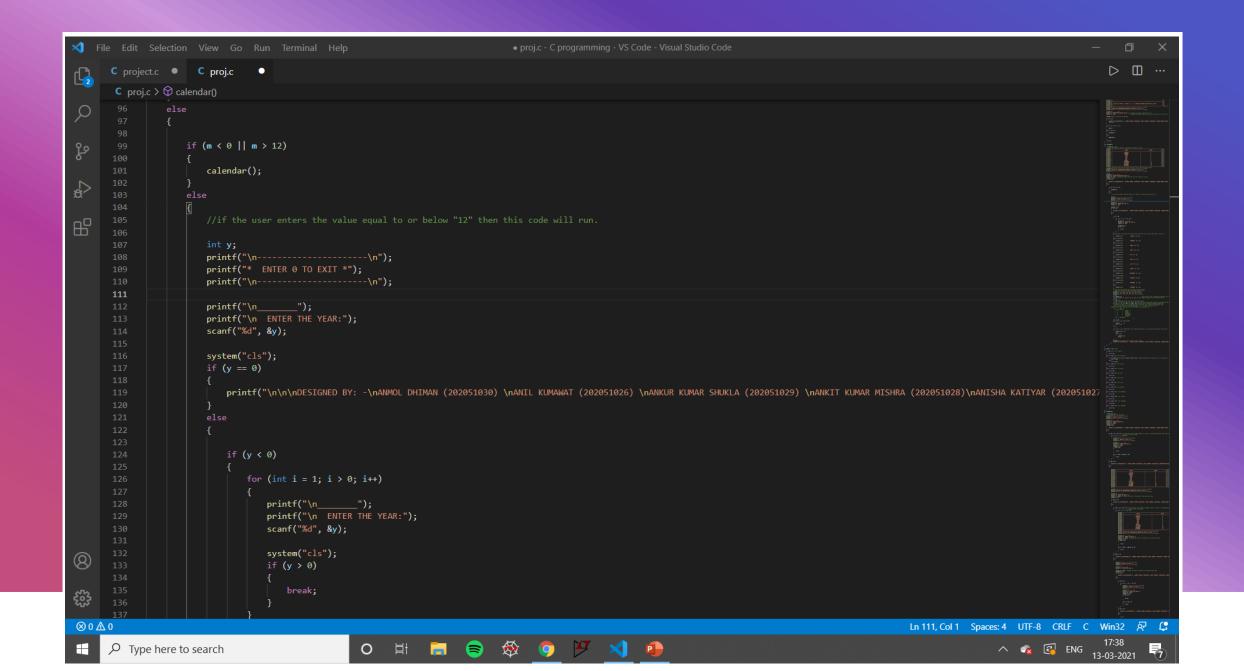
DAY CODE	<u>DAY</u>
0	SUNDAY
1	MONDAY
2	TUESDAY
3	WEDNESDAY
4	THURSDAY
5	FRIDAY
6	SATURDAY

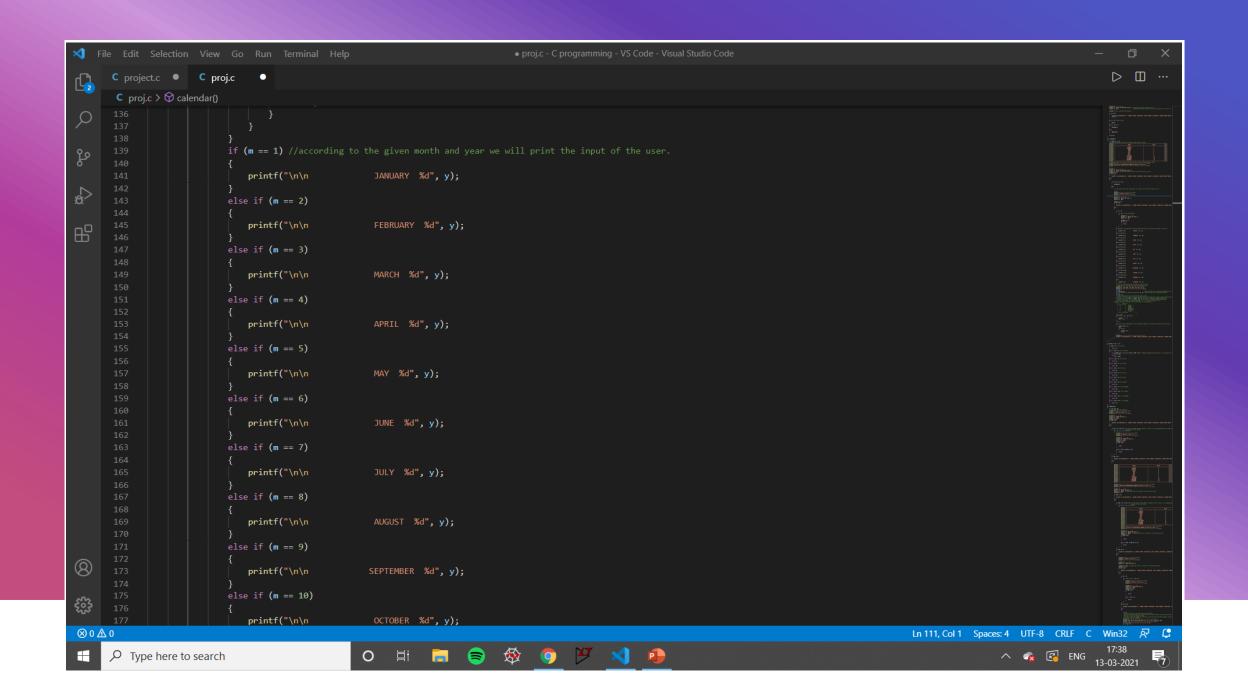
CODE:-

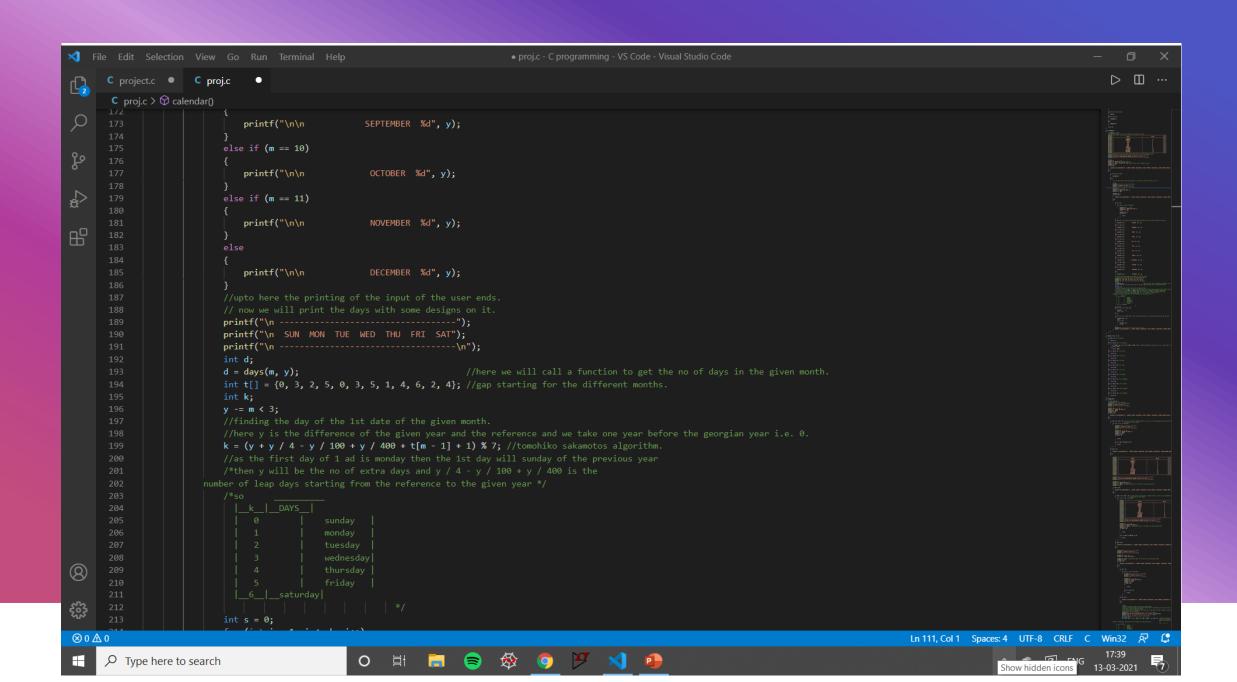


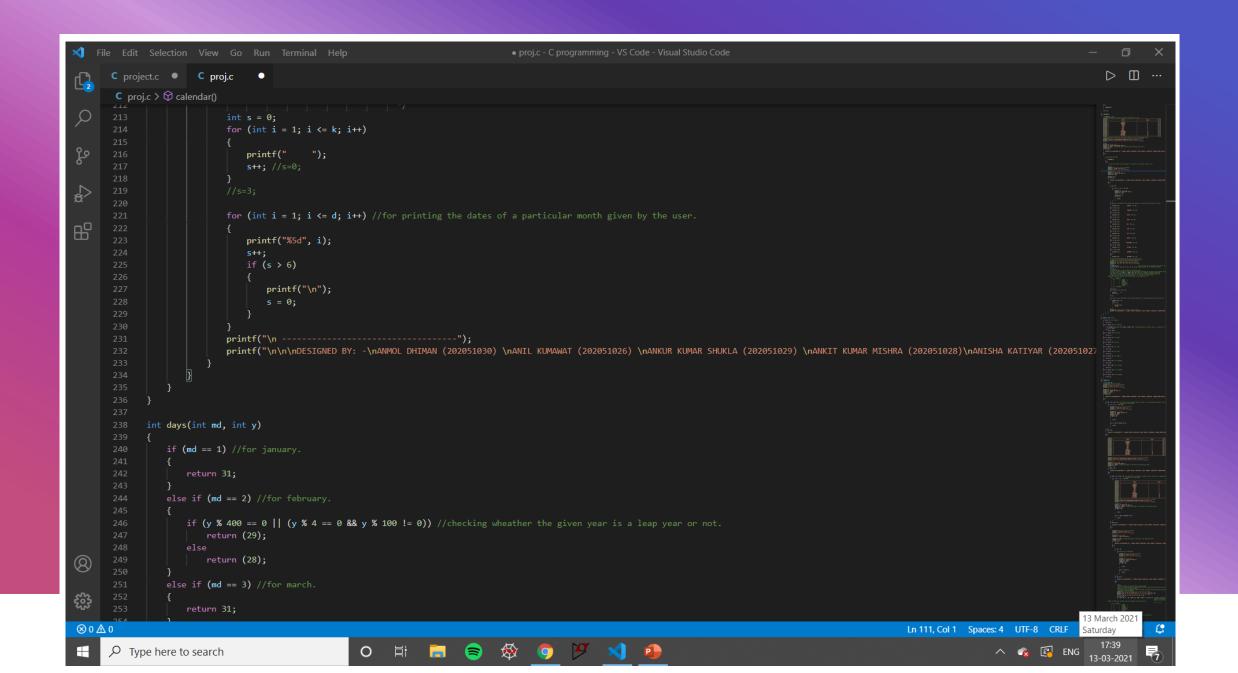


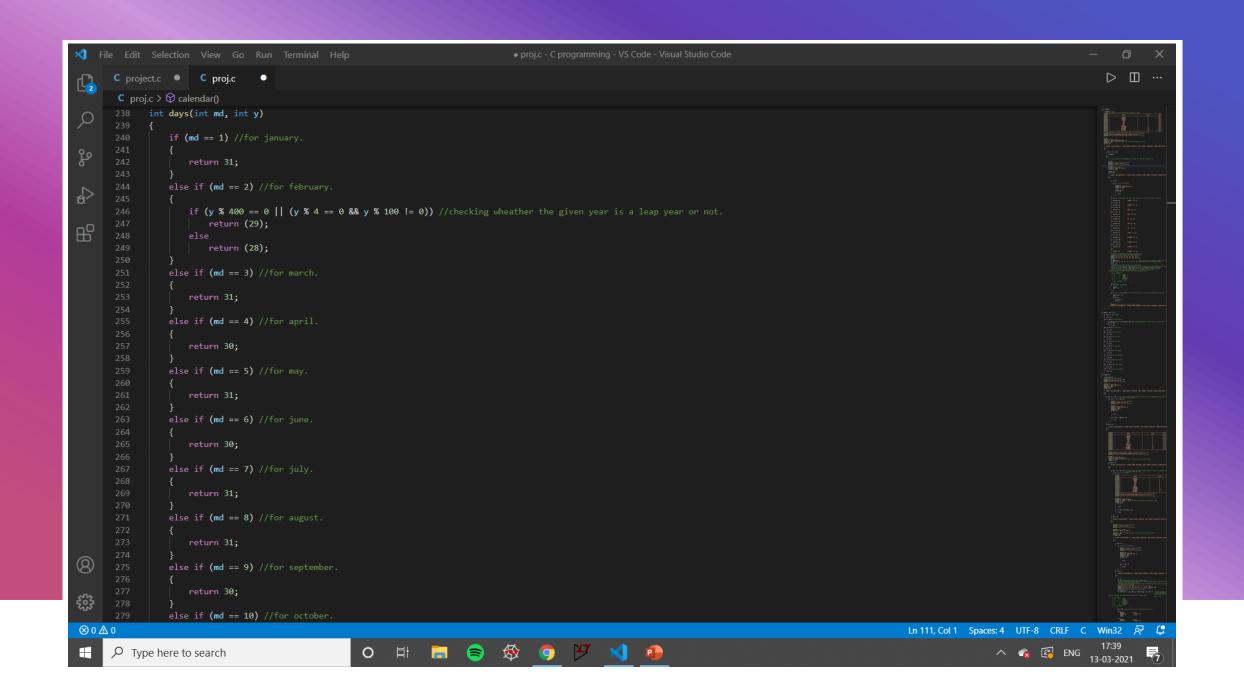


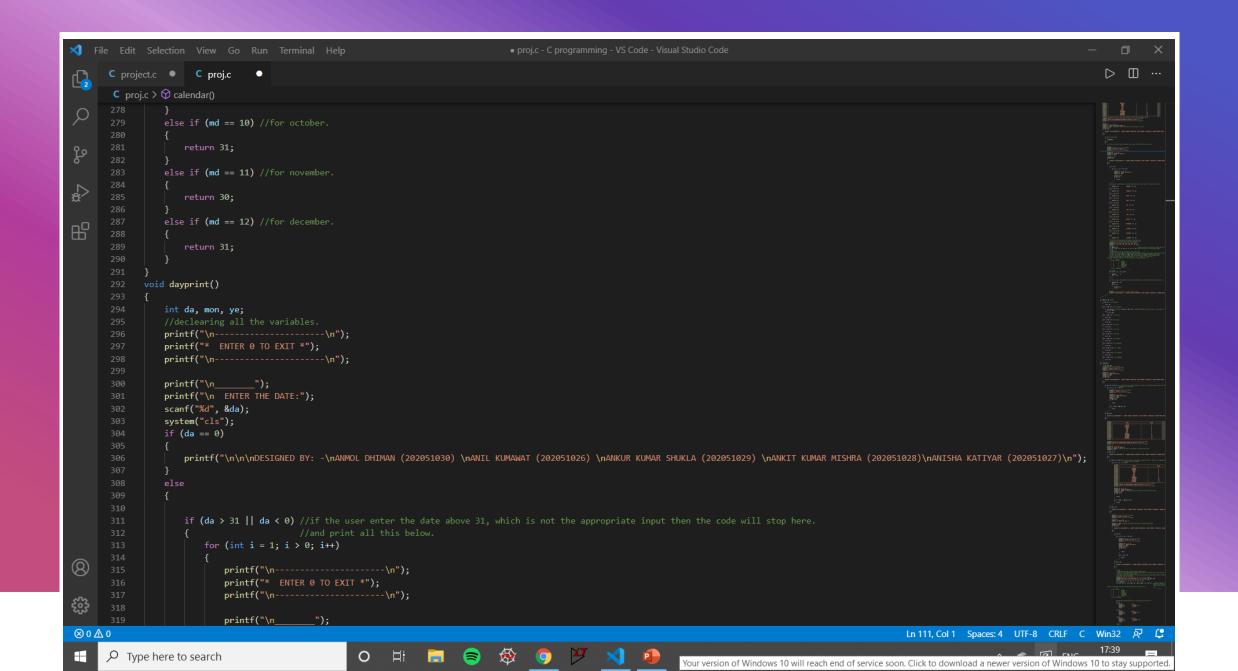


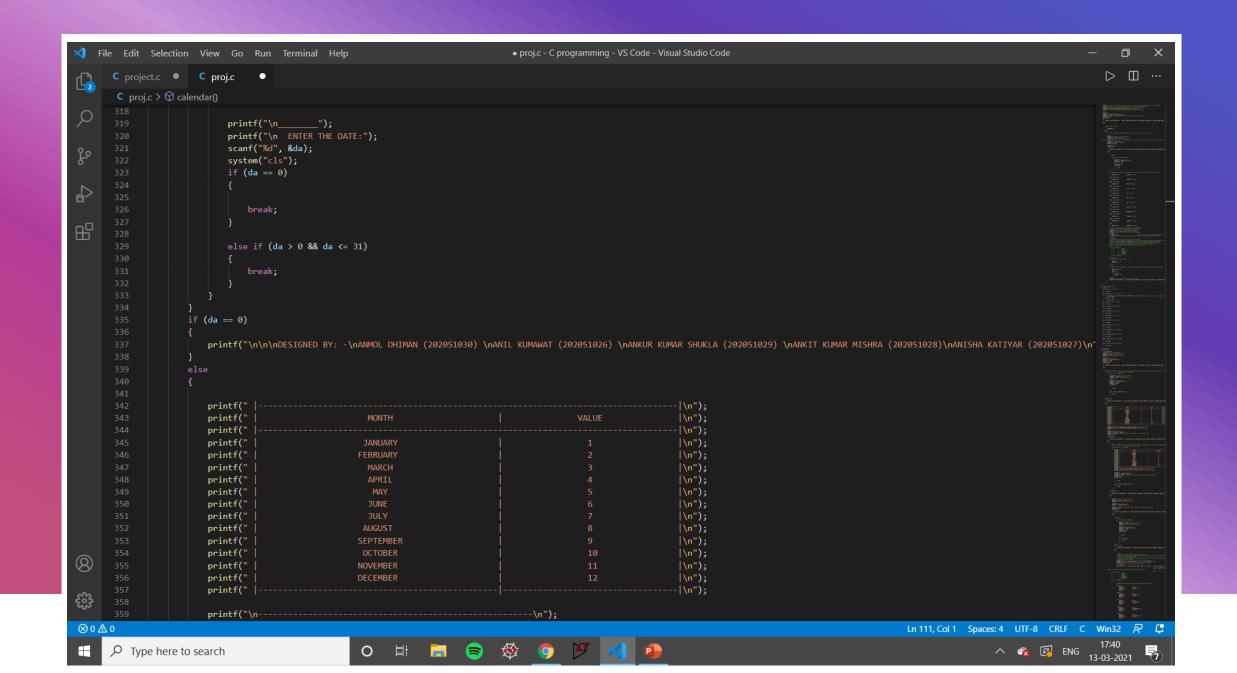


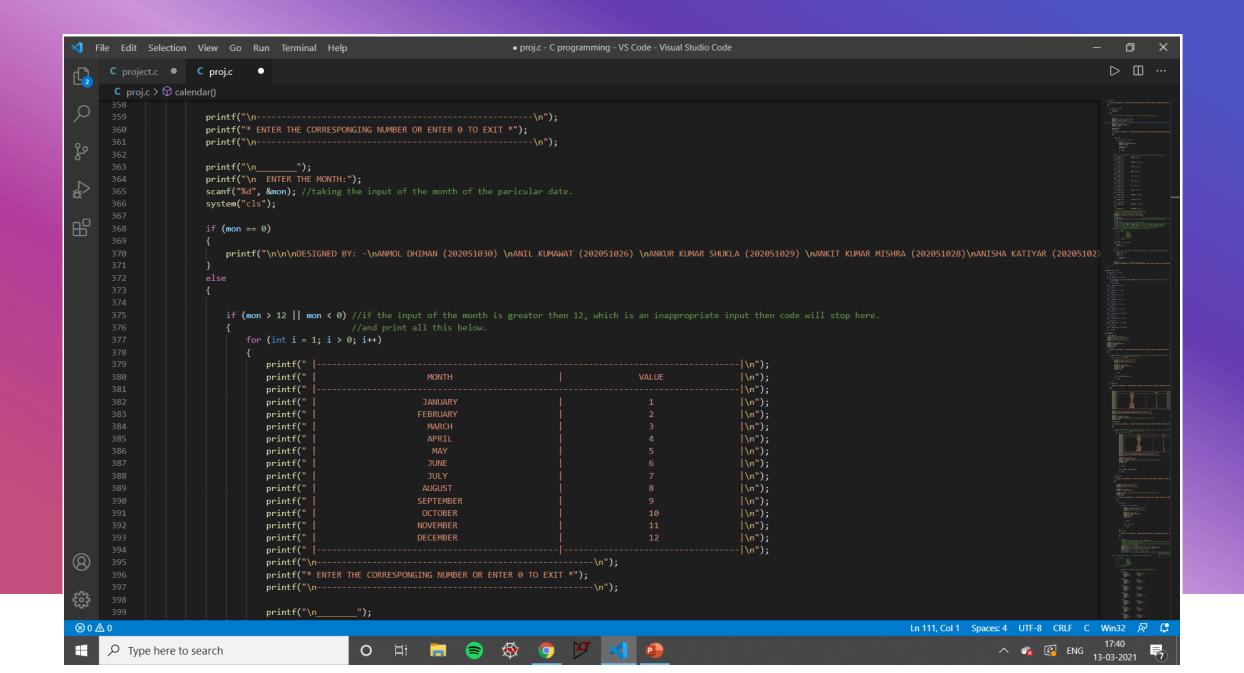


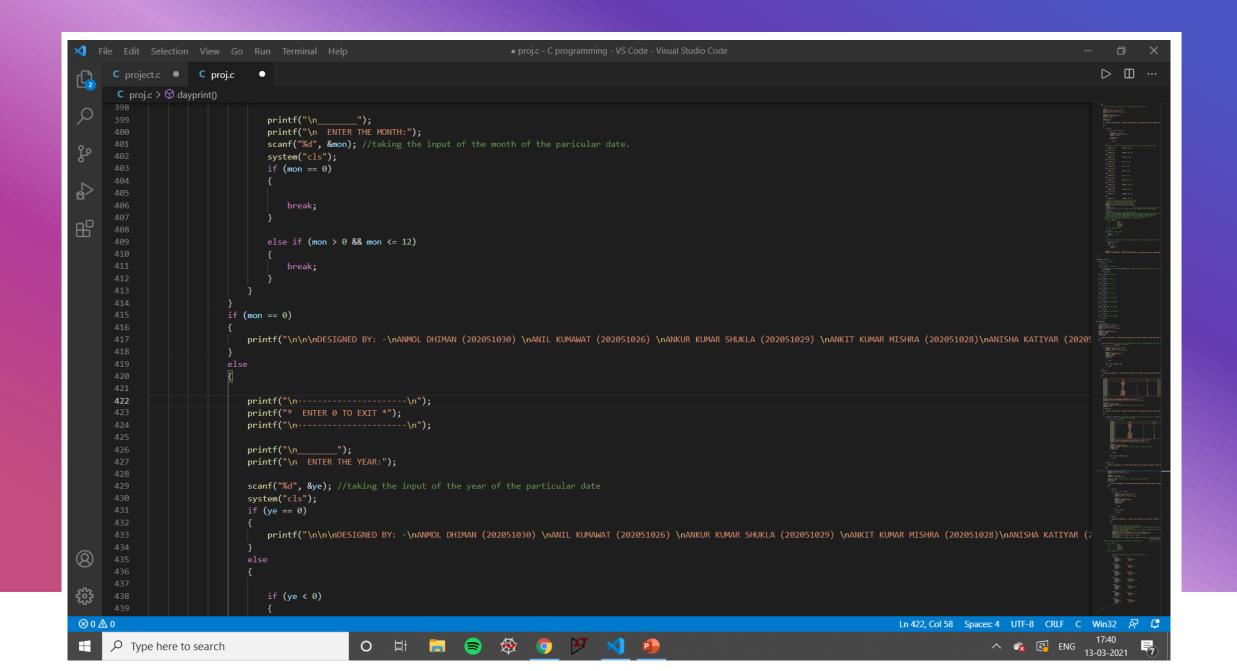


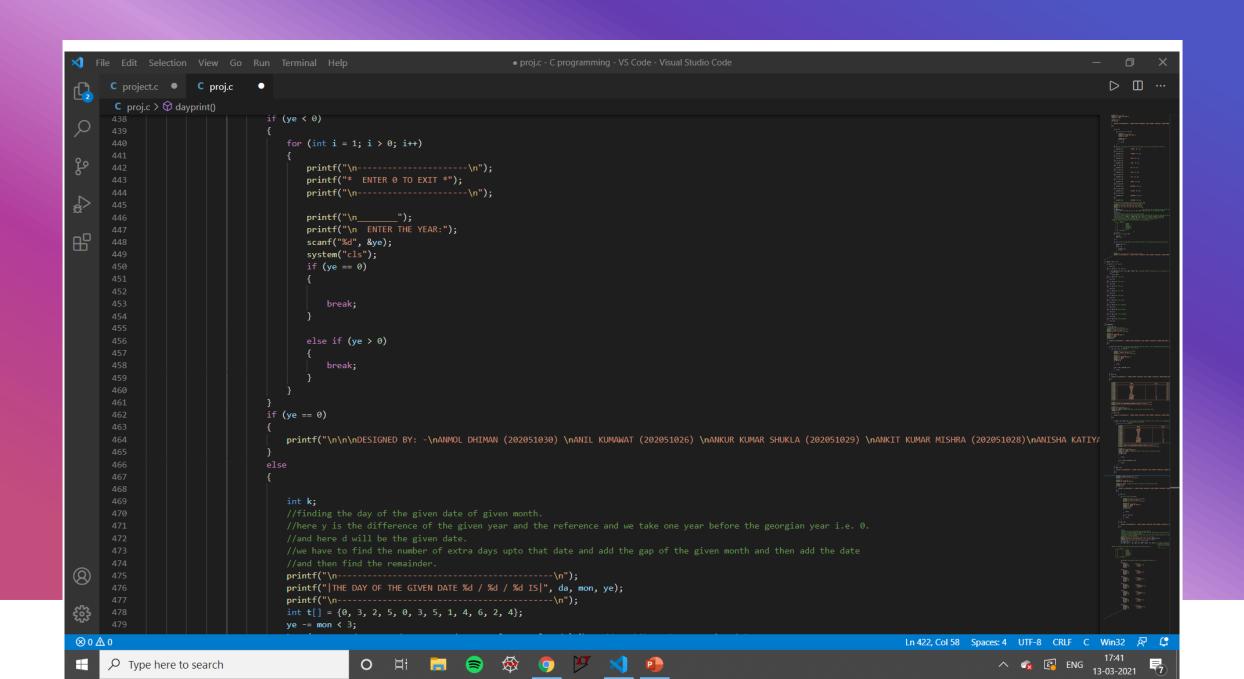


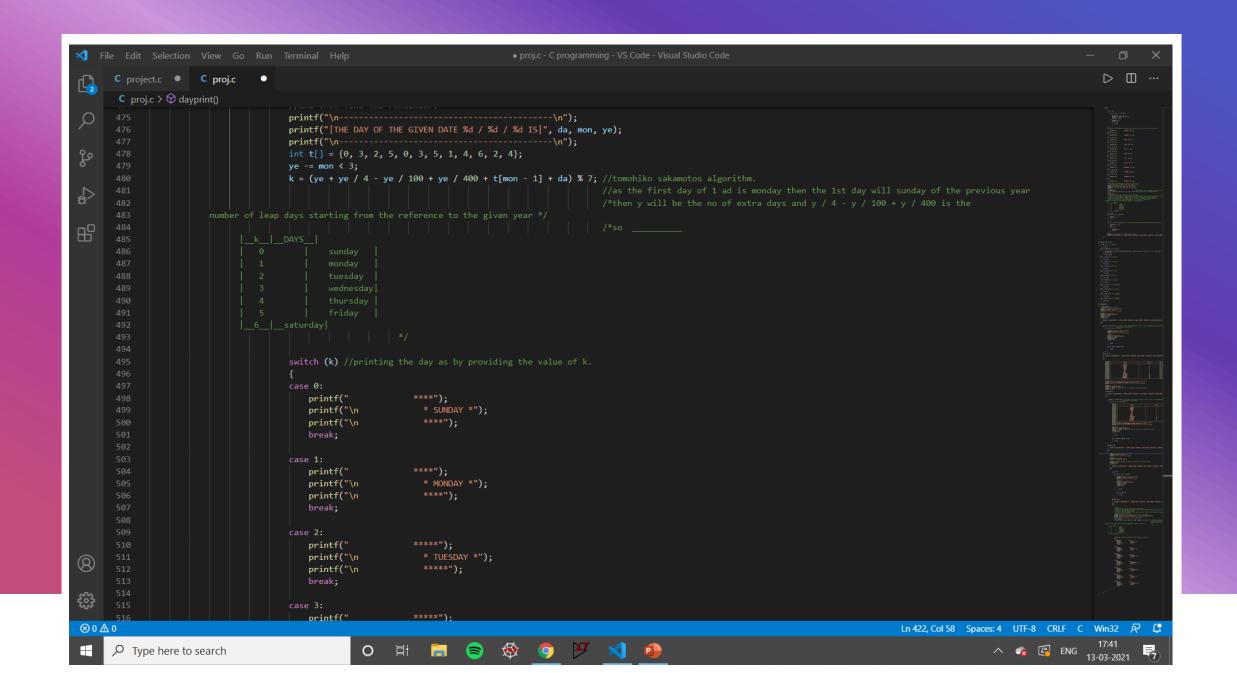


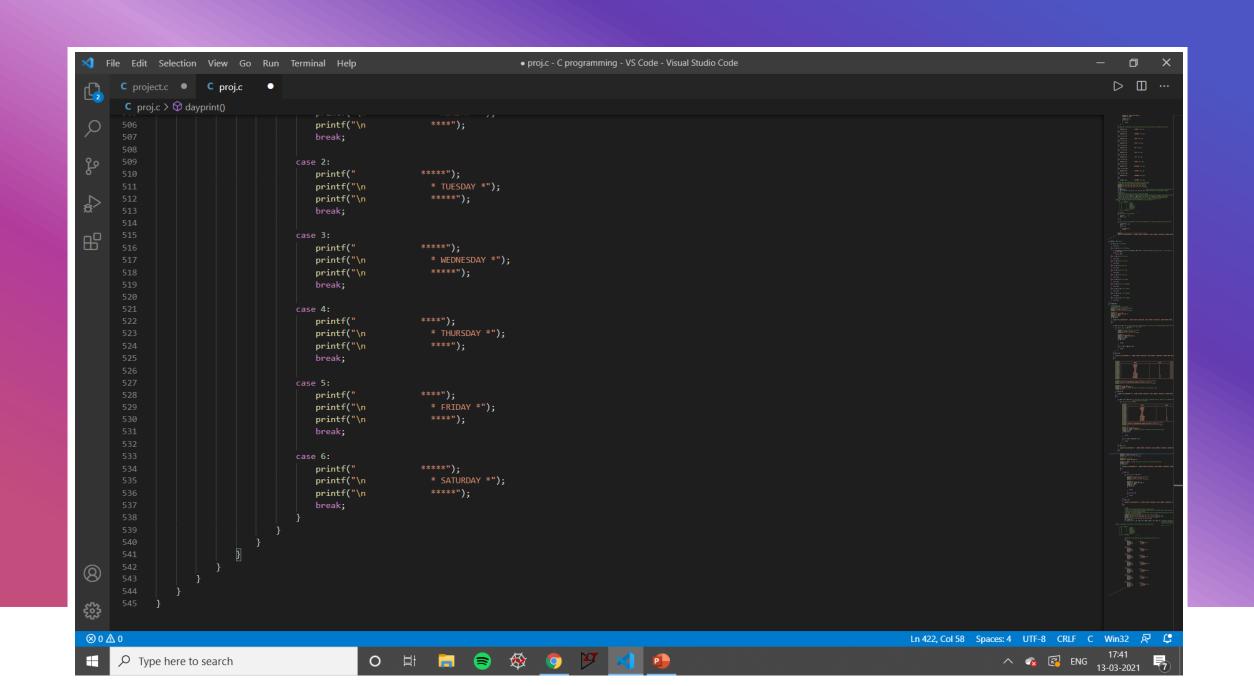








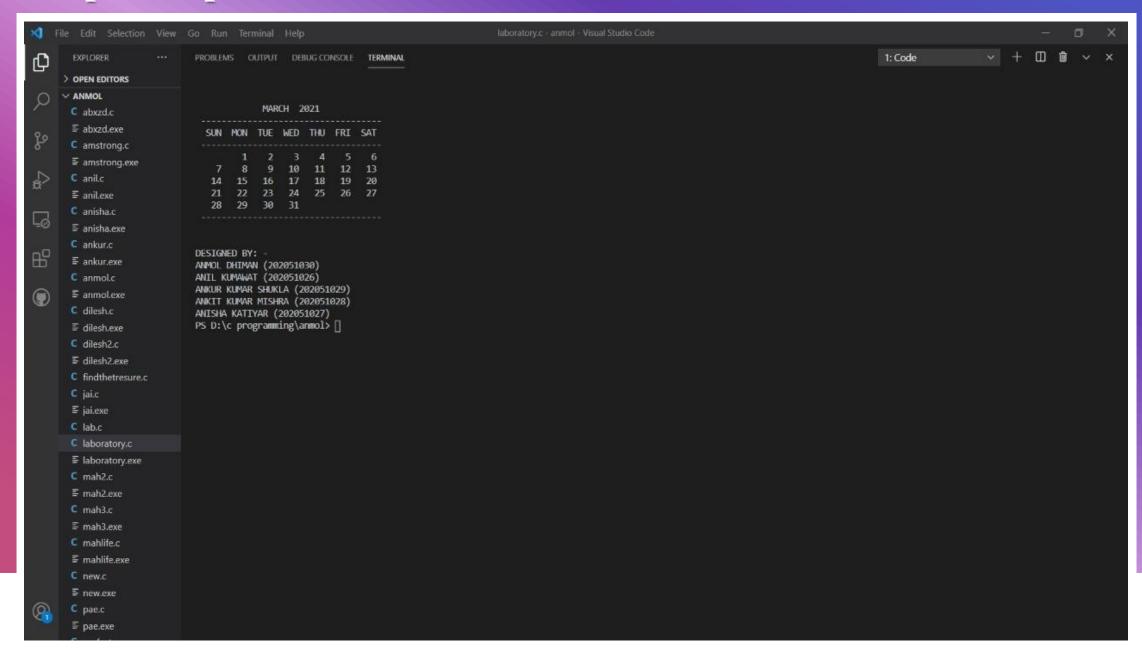


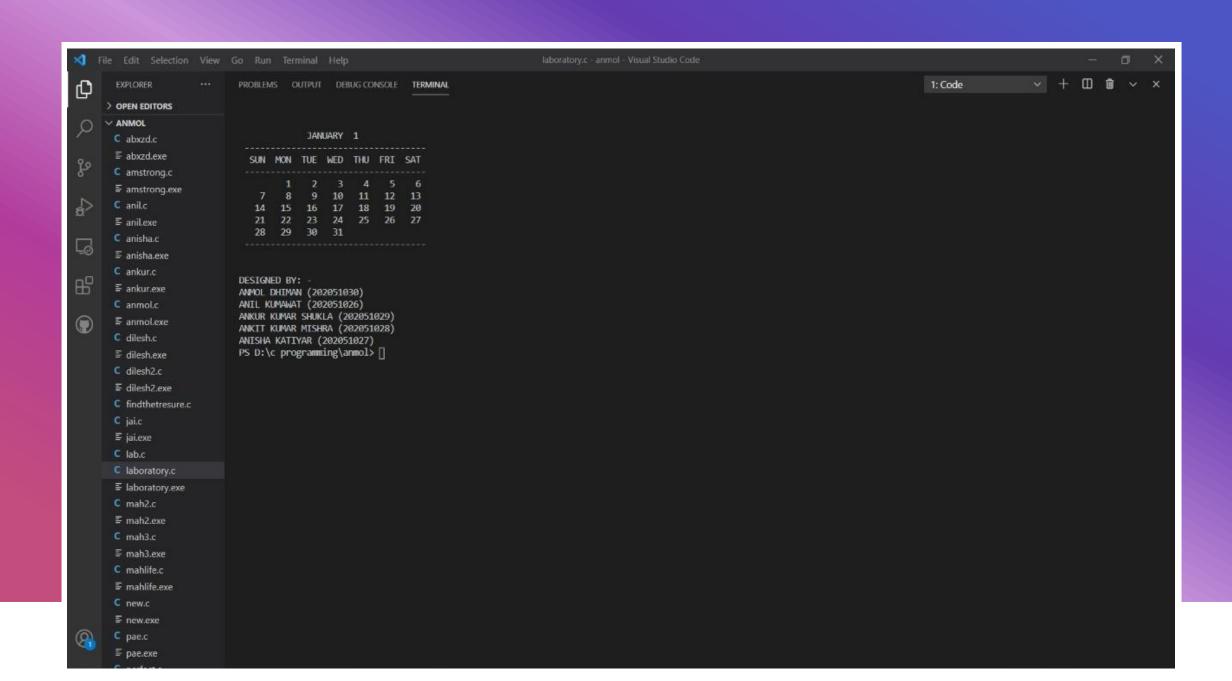


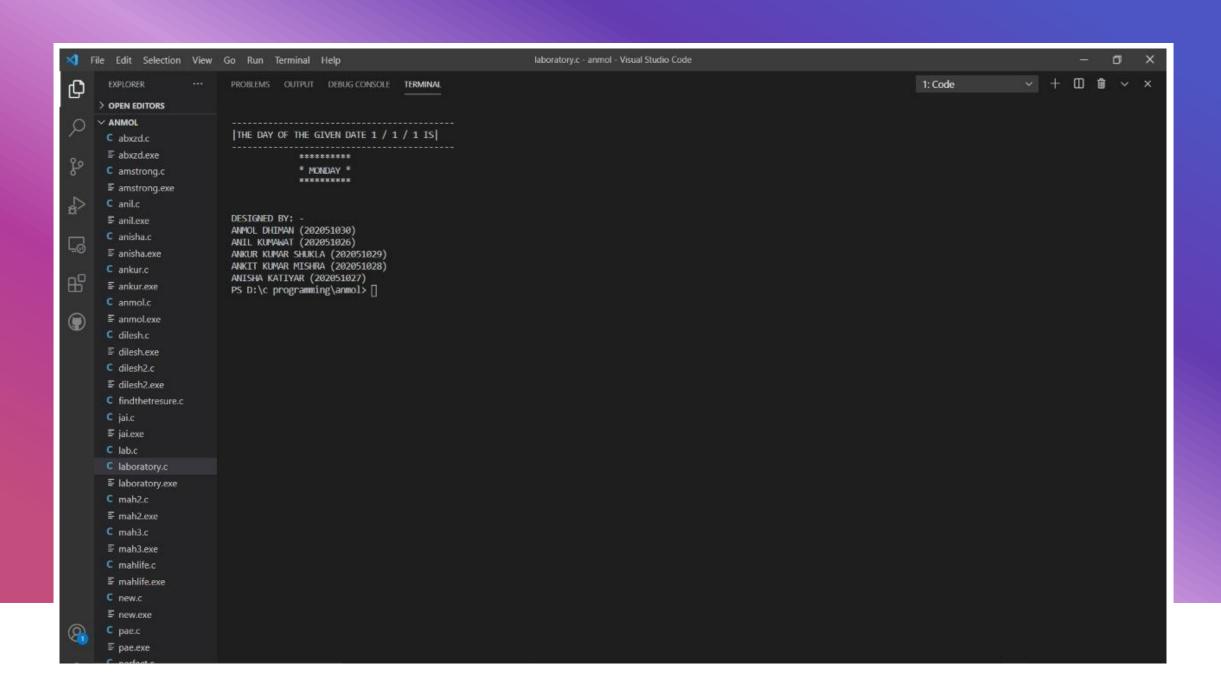
Code Text file :-

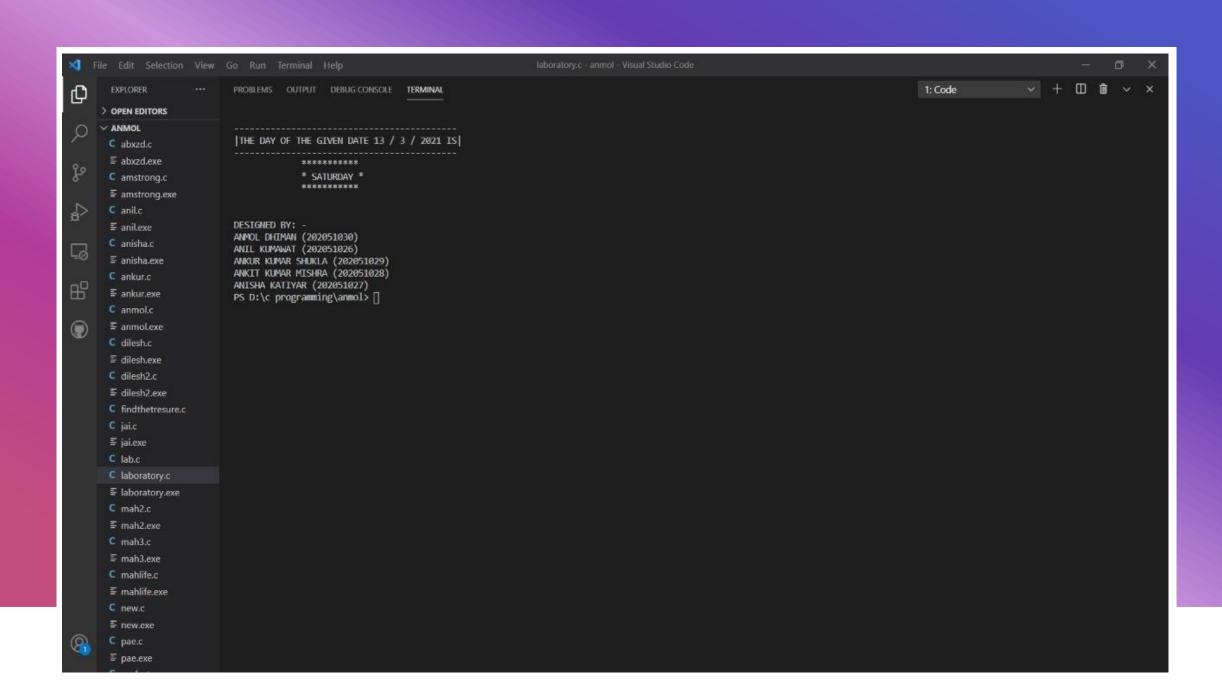
"); printf("\n WE HAVE TWO FEATURES:- "); printf("\n WE HAVE TWO FEATURES:- "); printf("\n PRESS (1) TO PRINT THE CALENDAR FOR A MONTH OF A SPECIFIC YEAR:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FIND OUT THE DAY ON A GIVEN DATE:- "); printf("\n PRESS (2) TO FI
"); printf("\n "); printf("\n SELECT AN OPTION (EITHER 1 or 2) TO PROCEED FURTHER AND ENTER 0 TO EXIT "); printf("\n ENT THE DESIRED VALUE:"); //storing the input of the user in "n". scanf("\d", \scansilon", \scansilon\s
"); printf("\n ::::::::::::: \n\n"); printf("\n :::::::::::::: \n\n"); printf("\n :::::::::::::: \n\n"); printf("\n ::::::::::::::: \n\n"); printf("\n :::::::::::::::::::: \n\n"); printf("\n ::::::::::::::::::::::::::::::::::::
THE DESIRED VALUE:"); //storing the input of the user in "n". scanf("%d", &n); //taking the desired input form the user and enter it into the "n". system("cls"); //clearing the desktop. if (n = 0) { printf("\n\n\DESIGNED BY: -\nANMOL DHIMAN (202051030) \nANKUT (202051026) \nANKUT (2020
KUMAR SHUKLA (202051029) \(nANK11 KUMAK MISHRA (202051029) \(\text{nANK11 KUMAK MISHRA (202051029) \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
month of a year, printf("
/m // frame(- /m // frame(
6 \n"); printf(" JULY 7 \n"); printf(" AUGUST 8 \n"); printf(" SEPTEMBER 9 \n"); printf(" OCTOBER 10 \n"); printf(" NOVEMBER 11 \n"); printf(" DECEMBER 12 \n"); printf("
NOVEMBER In n
if (m = 0) print("inhin)DESIGNED BY: _\nannothin (m \text{DANNOL DHIMAN (202051026) \nannothin (m \text{Lord} \text{Courses}) \text{- limit. (iii)} else - (iiii) (m \text{- (iii) in (iiii) in (iiiii) in (iiii) i
(fif the user enters the value equal to or below "12" then this code will run. int y; printf("\"\"\"\"\"\"\"\"\"\"\"\"\"\"\"\"\"\"\
0) { printf("h)n n DESIGNED BY: -\nANMOL DHIMAN (202051026)\nANKIK KUMAWAT (202051026)\nANKIK KUMAWAT (202051026)\nANKIK KUMAWAT (202051026)\nANKIK KUMAWAT (202051026)\nANKIK KUMAWAT (202051027)\n"; } else { if (y < 0) } for (in t
$\begin{array}{llllllllllllllllllllllllllllllllllll$
will print the input of the user. $\{$ print $\{$ "\n\n\n\ MARCH $\%$ d", y); $\}$ else if $(m = 2)$ $\{$ print $\{$ "\n\n\ MARCH $\%$ d", y); $\}$ else if $(m = 3)$ $\{$ print $\{$ "\n\n\ MARCH $\%$ d", y); $\}$ else if $(m = 4)$
else if (m == 8)
printf("\n\n\n\ NOVEMBER %\d", y); } else { printf("\n\n\n\ DECEMBER \dd", y); } //upto here the printing of the input of the user ends. // now we will print the days with some designs on it. printf("\n\n\
printf("\n SUN MON TUE WED THU FRI SAT"); printf("\n = -\n"); int d; d = days(m, y); //here we will call a function to get the no of days in the given month. int t[] = {0, 3, 2, 5, 0, 3, 5, 1, 4, 6, 2, 4}; //gap starting for the different months.
k; $y = m < 3$; //finding the day of the 1st date of the given month. //here y is the difference of the given wear and the reference and we take one year before the georgian year i.e. 0. $k = (y + y/4 - y/100 + y/400 + t[m-1] + 1)\%7$; //fomohiko sakamotos algorithm. //as the first day of 1 ad is
monday then the 1st day will sunday of the previous year /*then y will be the no of extra days and y /4 - y / 100 + y / 400 is the number of leap days starting from the reference to the given year */ /*so _k_DAYS_ 0 sunday 1 monday 1
2 tuesday $ 3 $ wednesday $ 4 $ thursday $ 5 $ friday $ 6 $ saturday */ int $s=0$; for (int $i=1$; $i=$
$=1$; $i <= d$; $i++$) //for printing the dates of a particular month given by the user. { printf("\n\n\n\n\ESIGNED BY: - \ printf("\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n
\nANMOL DHIMAN (202051030) \nANKUR KUMAWAT (202051026) \nANKUR KUMAR SHUKLA (202051027)\n"); } } } } } } int days(int md, int y){ if (md == 1) //for january. { return 31; } else if (md == 2) //for february. {
$(y \% 400 = 0 \parallel (y \% 4 = 0 \&\& y \% 100 != 0))$ //checking wheather the given year is a leap year or not. return (29); else if (md = 3)//for march. { return 31; } else if (md = 4)//for april. { return 30; } else if (md = 5)//for may. { return 31; } else if (md = 5)//for may. { return 31; } else if (md = 5)//for may. { return 31; } else if (md = 5)//for may.
{ return 30; } else if (md == 7) // for july. { return 31; } else if (md == 8) // for august. { return 30; } else if (md == 1) // for october. { return 30; } else if (md == 1) // for november. {
return 31; }}void dayprint(){ int da, mon, ye; //declearing all the variables. printf("\n\\n"); printf("\n ENTER 0 TO EXIT *"); printf("\n ENTER THE DATE:"); scanf("\od", &da); system("cls"); if (da == 0) { printf("\n-\n\n\nDESIGNED BY:
$\label{eq:lambda} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$
KUMAR MISHRA (202051028)\nANISHA KATIYAR (202051027)\n"); } else { printf("
\n"); printf(" JANUARY 1 \n"); printf(" FEBRUARY 2 \n"); printf(" MARCH 3 \n"); printf(" APRIL 4
\n"); printf(" MAY 5 \n"); printf(" JUNE 6 \n"); printf(" JULY 7 \n"); printf(" AUGUST 8 \n"); printf("
SEPTEMBER 9 \n"); printf(" OCTOBER 10 \n"); printf(" NOVEMBER 11 \n"); printf(" DECEMBER 12 \n"); printf("
MONTH:"); scanf("%d", &mon); //taking the input of the month of the paricular date. system("cls"); if (mon == 0) { printf("\n \n\nDESIGNED BY: -\nANMOL DHIMAN (202051026) \nANKUR KUMAR SHUKLA (202051029) \nANKUR KUMAR SHUKLA (202051029) \nANKUR KUMAR MISH
(202051028)\nANISHA KATIYAR (202051027)\n"); } else { if (mon > 12 mon < 0) //if the input of the month is greator then 12, which is an inappropriate input then code will stop here. { //and print all this below. for (int i = 1; i > 0; i++) { print 1
\n"); printf(" MONTH VALUE \n"); printf(" \n"); printf(" JANUARY \n"); printf(" APRIL 4 \n"); printf(" MAY 5
/m // Frank// - //m // Frank//
\n"); printf(" OCTOBER 10 \n"); printf(" NOVEMBER 11 \n"); printf(" DECEMBER 12 \n"); printf(" \n"); printf(" \n"); printf("\n"); printf(
primit (ENTER THE MOSTH:); scan(wd , atmost), //taking tie input of the innoint of the particular date. system; (is) (in) == 0)
print(
(print("n-"); pri
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System (cs.), 1940 19
plantic uniquidad bit. Planting the day of the given date of given month.
and of the given man of the given man the following the first and the fi
the date //and then find the remainder. printf("\n\n"); printf("\THE DAY OF THE GIVEN DATE %d / %d / %d IS ", da, mon, ye); printf("\n\n"); int t[] = {0, 3, 2, 5, 0, 3, 5, 1, 4, 6, 2, 4, 5, 2, 5, 3, 5, 1, 4, 6, 2, 4, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5,
the date //and then find the remainder. printf("\n-_\n"); printf("\lambda Samotos algorithm. printf("\lambda First day of 1 ad is monday then the 1st day will sunday of the previous year /* then y will be first day of 1 ad is monday then the 1st day will sunday of the previous year /* then y will be first day of 1 ad is monday then the 1st day will sunday of the previous year
the date //and then find the remainder. ye int f("\n-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
the date
the date
the date

Sample Outputs:-









Contributions and References:-

- ❖ This code has been build up from the logic related to repeating dates, months and years (including cases for leap years) in continuation with the pattern of the Gregorian Calendar.
- From our pre requisite knowledge, we were able to build up this code for the year 2001-2030.
- ❖ But to extend it even further, including the years before and after this, we took help of the "TOMOHIKO SAKAMOTOS ALGORITHM".

- * References from the internet have been taken from websites:
 - → Geeks for geeks
 - → Quora

All members have equally contributed for the success of this code which involved building the logic, deciding the order, implementing procedures and statements, beautifying the code for better readability, modifying the screen for proper display of the output and finally, in compiling it all and creating this presentation.

So, at last, we would like to express our gratitude for letting us have an opportunity to work upon this topic.

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