```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
#include "../include/cis1057.h"
#include<stdbool.h>

bool is_a_leap_year();
bool valid_date();

int get_day(const char *);
int get_month(const char *);
int get_year(const char *);

int ordinal_date();
int print_us_date();
int print_ordinal_date();

/*
 * Location:Temple University Computer Science
 * Programmer:Robert Bara
 * Class:Introduction to C Programming 1057 Spring 2019Section 004
 * Assignment:6-Leap Year and Ordinal Date Calculator
 * Date:March 13, 2019
 * Version:1
 * Description:Displays an entered date as US style, Julianized style,
and checks if it is a leap year
 */

int main()
{
      int date, month, day, year, prompt_day, prompt_month, prompt_year;

      print_cis1057_banner(6,"Leap Year/OD Calculator");
      month=get_month("");
      day=get_day("");
      year=get_year("");
      if (valid_date(month, day ,year)){
            date=ordinal_date(month,day,year);
              print_us_date(month, day, year);
            print_ordinal_date(year,date);
}
      else;
return EXIT_SUCCESS;
}

/*
 * Function: get_day(const char *prompt)
 * Inputs: prompt-integer entered from user.
 * Outputs:*none*
 * Globals:* none *
 * Returns: int day
 * Description: Gets a day from user.
 */
```

```
int get_day(const char *prompt)
{
      int day;
      puts("Enter a day(DD):");
        scanf("%d", &day);
      return day;
}

/*
* Function: get_month(const char *prompt)
* Inputs: prompt-integer entered from user.
* Outputs:*none*
* Globals:* none *
* Returns: int year
* Description: Gets a month from user.
*/

int get_month(const char *prompt)
{
      int month;
      puts("Enter a month(MM):");
        scanf( "%d", &month );
      return month;
}

/*
* Function: get_year(const char *prompt)
* Inputs: prompt-integer entered from user.
* Outputs:*none*
* Globals:* none *
* Returns: int year
* Description: Gets a year from user.
*/

int get_year(const char *prompt)
{
         int year;
         puts("Enter a year(YYYY):");
         scanf( "%d", &year );
         return year;
}

/*
 * Function: is_a_leap_year(int year)
 * Inputs: int year- year from get_year
 * Outputs:* none *
 * Globals:* none *
 * Returns: true or false- prints it is a leap year if true, Does not
print anything if false
 * Description: Checks if the entered year is a leap year
 */

 bool is_a_leap_year( int year)
 {
```

```
          if(year%400 == 0 && year%100 == 0 || year%4 == 0 &&
year%400==0){
                  printf("Is a leap year\n", year);
                  return true;}
         else{
              puts("Not a leap year");
         return false;
 }
 }

/*
 * Function: int ordinal_date(int month, int day, int year)
 * Inputs: int month, day, year-these come from get_month, get_day,
get_year
 * Outputs:*none*
 * Globals:* none *
 * Returns: od-ordinal date
 * Description: Calculates the ordinal date
 */

int ordinal_date(int month, int day, int year)
{     int od;
      if(is_a_leap_year(year)){
      od=(month-1)*30+day;
}
      else if(is_a_leap_year(year)==false && month<3 && day<=28){
      od=(month-1)*30+day;
}
      else if(is_a_leap_year(year)==false && month>=3){
      od=(month-1)*30+day-1;
}
      return od;
}

/*
 * Function: valid_date(int month, int day, int year)
 * Inputs: int month, day ,year- comes from get_month, get_day, get_year
 * Outputs:*none*
 * Globals:* none *
 * Returns: true or false- True if it is a valid date, false if it is
not.
 * Description: Checks if the entered date is valid or not.
 */

bool valid_date(int month, int day, int year)
{
       if(month>0 && month<=12)
            {
              if(day>0 && day<=31)
                {
                 if(year>=1900 && year<=2200)
                  return true;
                }
```

```
            }
      else if(month==0 && day<=32 && year>=1900 && year<2200){
      puts("Error, date is invalid, please enter a new date.");
            return false;
}
}

/*
 * Function: print_us_date(int month, int day, int year)
 * Inputs: int month, day ,year- comes from get_month, get_day, get_year
 * Outputs:*none*
 * Globals:* none *
 * Returns: us_date- the printed US styled date
 * Description: styles the entered date as month/day/year
 */

int print_us_date(int month, int day, int year)
{     int us_date;
      printf("The Date will be read in United States as %d / %d / %d \n",
month, day, year);
return us_date;
}

/*
 * Function: print_ordinal_date(int year, int od)
 * Inputs: int ordinal_date-comes from ordinal_date
 * Outputs:*none*
 * Globals:* none *
 * Returns: ordinal_date-the printed julianized date
 * Description: Styles the entered date as year-ordinal date
 */

int print_ordinal_date(int year, int od)
{     int ordinal_date;
      printf("The Ordinal Date is %d%d \n", year, od);
return ordinal_date;
}

#include<stdio.h>
#include<stdlib.h>
#include<stdbool.h>

bool is_a_leap_year(int year);

/*
* Location:Temple University Computer Science
* Programmer:Robert Bara
* Class:Introduction to C Programming 1057 Spring 2019Section 004
* Assignment:6-Leap Year and Ordinal Date Calculator
* Date:March 13, 2019
* Version:1
* Description:Displays an entered date as US style, Julianized style, and
checks if it is a leap year
*/
```

```
int main()
{
      is_a_leap_year(1600);
      is_a_leap_year(2000);
      is_a_leap_year(2400);
      is_a_leap_year(1700);
      is_a_leap_year(1800);
      is_a_leap_year(1900);
      is_a_leap_year(2100);
      is_a_leap_year(2200);
      is_a_leap_year(2300);
      is_a_leap_year(2500);
      is_a_leap_year(2600);

      return EXIT_SUCCESS;
}


/*
* Function: is_a_leap_year(int year)
* Inputs: int year- year from get_year
* Outputs:* none *
* Globals:* none *
* Returns: true or false- prints it is a leap year if true, Does not
print anything if false
* Description: Checks if the entered year is a leap year
*/

 bool is_a_leap_year( int year)
{
         if(year%400 == 0 && year%100 == 0 || year%4 == 0 &&
year%400==0){
                  printf("Is a leap year\n", year);
                  return true;}
        else{
             puts("Not a leap year");
      return false;
}
}

Script started on Wed 13 Mar 2019 07:08:43 PM EDT
 ]0;tuj22026@astro:~/lab6  [?1034h[Wed Mar 13 19:08:43
 [31mtuj22026@astro [0m:~/lab6 ] $ cc lab6.d  [K  [Kdriver.c
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:08:51
 [31mtuj22026@astro [0m:~/lab6 ] $ ./a.out lab6driver.c
Is a leap year
Is a leap year
Is a leap year
Not a leap year
Not a leap year
Not a leap year
Not a leap year
Not a leap year
```

```
Not a leap year
Not a leap year
Not a leap year
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:08:58
 [31mtuj22026@astro [0m:~/lab6 ] $ cc lab6.c
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:09:02
 [31mtuj22026@astro [0m:~/lab6 ] $ ./a.out lab6.c

Lab# Assignment 6
Leap Year/OD Calculator
Compiled:  Mar 13 2019 19:09:02
Enter a month(MM):
03
Enter a day(DD):
13
Enter a year(YYYY):
2019
Not a leap year
Not a leap year
Not a leap year
The Date will be read in United States as 3 / 13 / 2019
The Ordinal Date is 201972
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:10:32
 [31mtuj22026@astro [0m:~/lab6 ] $ ./a.out lab6.c

Lab# Assignment 6
Leap Year/OD Calculator
Compiled:  Mar 13 2019 19:09:02
Enter a month(MM):
03
Enter a day(DD):
13
Enter a year(YYYY):
2000
Is a leap year
The Date will be read in United States as 3 / 13 / 2000
The Ordinal Date is 200073
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:10:41
 [31mtuj22026@astro [0m:~/lab6 ] $ ./a.out lab6.c

Lab# Assignment 6
Leap Year/OD Calculator
Compiled:  Mar 13 2019 19:09:02
Enter a month(MM):
07
Enter a day(DD):
26
Enter a year(YYYY):
1967
Not a leap year
Not a leap year
Not a leap year
The Date will be read in United States as 7 / 26 / 1967
The Ordinal Date is 1967205
```

```
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:10:57
 [31mtuj22026@astro [0m:~/lab6 ] $ ./a.out lab6.c

Lab# Assignment 6
Leap Year/OD Calculator
Compiled:  Mar 13 2019 19:09:02
Enter a month(MM):
321
Enter a day(DD):
1233213
Enter a year(YYYY):
321
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:11:06
 [31mtuj22026@astro [0m:~/lab6 ] $ ./a.out lab6.c

Lab# Assignment 6
Leap Year/OD Calculator
Compiled:  Mar 13 2019 19:09:02
Enter a month(MM):
0
Enter a day(DD):
0
Enter a year(YYYY):
0
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:11:12
 [31mtuj22026@astro [0m:~/lab6 ] $ ./a.out lab6.c

Lab# Assignment 6
Leap Year/OD Calculator
Compiled:  Mar 13 2019 19:09:02
Enter a month(MM):
2132132432
Enter a day(DD):
12332132
Enter a year(YYYY):
200000000
 ]0;tuj22026@astro:~/lab6 [Wed Mar 13 19:11:21
 [31mtuj22026@astro [0m:~/lab6 ] $
script      escript      xscript        [1Pscript      xscript      iscri
pt      tscript       [C [C [C [C [C [C  [K  [K  [K  [K  [K  [K
exit

Script done on Wed 13 Mar 2019 07:11:35 PM EDT
```