

Introduction

As we all know, there is the practice of using two different date system in Nepal. One that has been used since the early ages particularly in Nepal i.e. Bikram Sambadh and another one Anno Domini. Here Anno Domini generally linked with Gregorian calendar whereas Bikram Sambadh is related to Nepali Patro. The system of B.S. was practiced since the Rana regime.

Due to these two different systems of date being practiced in Nepal, there is problem of converting one date to another form and vice versa and it's a bit considerable tedious task to convert the date on BS to the date on AD and vice versa. To solve this issue or to make the work much easy we have developed this particular Date Converter on C which does a simple but efficient task of converting BS date to AD and vice versa, the user interface on the Date Converter we have made is very minimalistic and based on DOS- like interface. Our Date Converter does a simple task of taking the date to be converted as input and displays the converted date as output. During our testing we found its working 100% effectively so, there is no point of doubting its efficiency as the algorithm we have used in this Date Converter is good enough.

To go in detail our date converter takes basically three input data namely year, month and day to be converted and process data through given algorithm to produce desired output as converted year, month and day. In our date converter we can also see the current system date and time at the bottom which makes the converter more significant and reliable. Here we have used minimalistic user interface to keep the thing simple but effective, limited programming skill was the also one of factors behind it. However the use of some simple but fascinating animations in our date converter indeed allures the user by pleasuring their eyes. We have used some graphics which we would like to call pseudo graphics as we haven't used any usual graphics function in fact we have used synchronized hex characters in suitable order and sequence to produce desired object on the screen. The actual conversion algorithm is based on simple mathematical calculations and tracking of each day which are discussed more in the further report. Our date converter has certain limitations like it can convert date only from 2000 BS to 2090 BS in the context of Nepali calendar and 1943 AD to 2033 AD in context of Gregorian calendar. This limitation is due to the limited flexibility available in the programming language we have used and also due to our limited programming skills. This limitations are not so much significant and impractical as the duration of date are outdated. However we are looking further to solve this limitation as far as possible. Ignoring this limitation our date converter holds well in almost all the conversion and gives the precise result.

Our date converter has solved a significant issue of converting the date from Nepali calendar to Gregorian calendar and vice versa. It is simple to use and is reliable due to fully functional conversion algorithm.

Problem Statement

The practice of two different date system in Nepal has raised a significant problem of conversion of date from one form to another. Though Bikram Sambat is officially used in the every governmental aspects in context of Nepal but while interacting with the international community we need to deal with them on Gregorian calendar so this has raised a problem of conversion of date.

In the past people used to track each and every day to find out the corresponding dates which was bit tedious and time consuming with the requirement of skilled man power. To track every day and perform complex calculations take considerable amount of time and skilled person are indeed needed. Due to the involvement of human the accuracy was doubtful as human beings suffer from tiredness, lack of concentration, etc. They have feelings and can become sad, depressed, bored or negligent and it will reflect on the work they do. Moreover, human beings cannot perform the same tasks over and over again with the same precision, accuracy and enthusiasm as the first time. After long time, people will become bored and tedium will set in. This will affect the performance and may result in fatal error. In addition.

The development of this date converter has solved most of the above mentioned problems. The major advantages of our date converter is the automation, diligence, accuracy, speed and reliability. Since our date converter is based on computer logic, it just works as instructed to produce desired output. It takes required data from the user and produce desired output. This was all possible due to the phenomenal level of automation achieved in a computer. Likewise, the other benefit our using our date converter is that, this date converter is constant and earnest in effort and application. Being based on computer logic our date converter does not have any human weakness. It does not get tired or bored. It won't go into depression or lose concentration. It perform the tasks of conversion that are given to it, irrespective of whether it is interesting, creative, monotonous or boring, irrespective of whether it is the first time of the millionth time, with exactly the same accuracy and speed. It is very much essential for a date converter to be 100% accurate to be produce correct output and our date converter holds good on it. Though some time the error may be due to the human factor but the error detecting and correcting techniques prevents false result. People often make mistake when data in keyed-in and the computer accepts whatever that is keyed-in. So if wrong input is given the output also will be wrong (GIGO). Our date converter is very light in size and the computer can execute it in matter of seconds and after execution it can perform any conversion in matter of second. So, our date converter is fast and reliable.

Aforementioned our date converter has solved a significant problem of conversion of dates into two different form and plays a vital role in making bridge between the Nepali calendar and Gregorian calendar. Our date converter is simple to use and doesn't need any specific skills. The things needed is only some data and once the data is keyed-in it just produce the desired output in matter of seconds. Our date converter has made people's life much easier.

Objective

As sensed by the name itself the simple but effective objective of this Date Converter is just to convert the BS date to AD date and vice-versa. Our date converter makes the conversion of dates from one form to another which indeed simplifies the tedious manual conversion. In fact the entire goal of our date converter is to make people's life more comfortable by solving the significant problem of conversion of date from Nepali calendar to Gregorian calendar and vice versa. To go on some details, our Date Converter has four significant modules with their respective objective which are discussed below:

1.1 Main menu:

This is the first thing people will say when they run the Date Converter. It has some user directions on how to use the Date Converter. We can also see some pseudo graphics which assist user for easy navigation and control of the Date Converter. The entire main menu can be represented in algorithm as follow:

1. Start
2. Display the input information and pseudo graphics
3. Take input
4. Call function bstoad() if input is 1 or call function adtobs() if input is 2 or call function exit() if input is 3.
5. Call function time()
6. Stop

1.2 BS to AD:

This another module in can be selected from main menu. In this module the program takes input i.e. the BS date and finally displays converted AD date. The entire module can be represented in algorithm as follow:

1. Start
2. Define the least possible Nepali date and its equivalent English date used in the converter.
(In this converter we have used 2000/01/01 as least possible Nepali date and its equivalent English date is 1943/04/14)
3. Take Nepali date from the user.
4. Count the total number of days between the least possible Nepali date (i.e. 2000/01/01) and the Nepali date entered by the user.
5. Add the difference of two Nepali dates to the equivalent English date(i.e. 1943/04/14) and also check for the year being leap or not
6. Display the final converted date.
7. End.

1.3 AD to BS:

This module is similar to the BS to AD module with the particular and significant difference i.e. this module takes input i.e. AD date and displays the converted BS date. The entire module can be represented in algorithm as follow:

1. Start
2. Define least possible English date and its equivalent Nepali date used in the converter.
(In this converter we have used 1943/04/14 as least possible English date and its equivalent Nepali date is 2000/01/01)
3. Take English date from the user.
4. Count the total number of days between the least possible English date (1943/04/14) and the English date entered by the user.
5. Add the difference of two English dates to the equivalent Nepali date (i.e. 2001/01/01).
6. Display the final converted Nepali date.
7. End

1.4 Exit:

This is the final module of the program which again can be selected from main menu in which the program terminates in 5 seconds after displaying a particular thanking message and the developer information. The entire module can be represented in algorithm as follow:

1. Start
2. Display thanking message.
3. Display developer team names.
4. Exit the program in 5 seconds.
5. Stop

Program Description

Our date converter is based on simple calculation and effective conversion algorithms. It has simple design and easy navigation with DOS- like interface. In this converter we have used some false graphics which are not based on actual graphic functions, in fact we have created objects on the screen using the hex characters in order. In addition we have made some intro animation using loop, Sleep() function and hex characters. We have also used time() function which displays the system current date and time at the bottom of every module except the exit module. All the modules are easily accessible through the main module. Therefore we have used multi menu design using switch statement.

To go in detail about how the actual program works we must understand first that this converter is developed on C- language and has DOS- like interface so the program takes valid input only through the keyboard. In the main menu the user can see input instructions and after the input the program executes the respective module. When the user gets in respective module, he/she can easily convert the desired date. We have used error detecting techniques which check the validity of each and every keyed- in data and finally restricts corrupted data. Once a valid data is keyed in, the data is processed using instructed algorithms and ultimately produce desired output. The entire algorithm is based on simple calculations and logics which finally produce the desired output. Each module is linked with the main menu. Thus the navigation of the program is simple and easy. The converter is executed within fraction of second and is fast and accurate.

Main Menu:

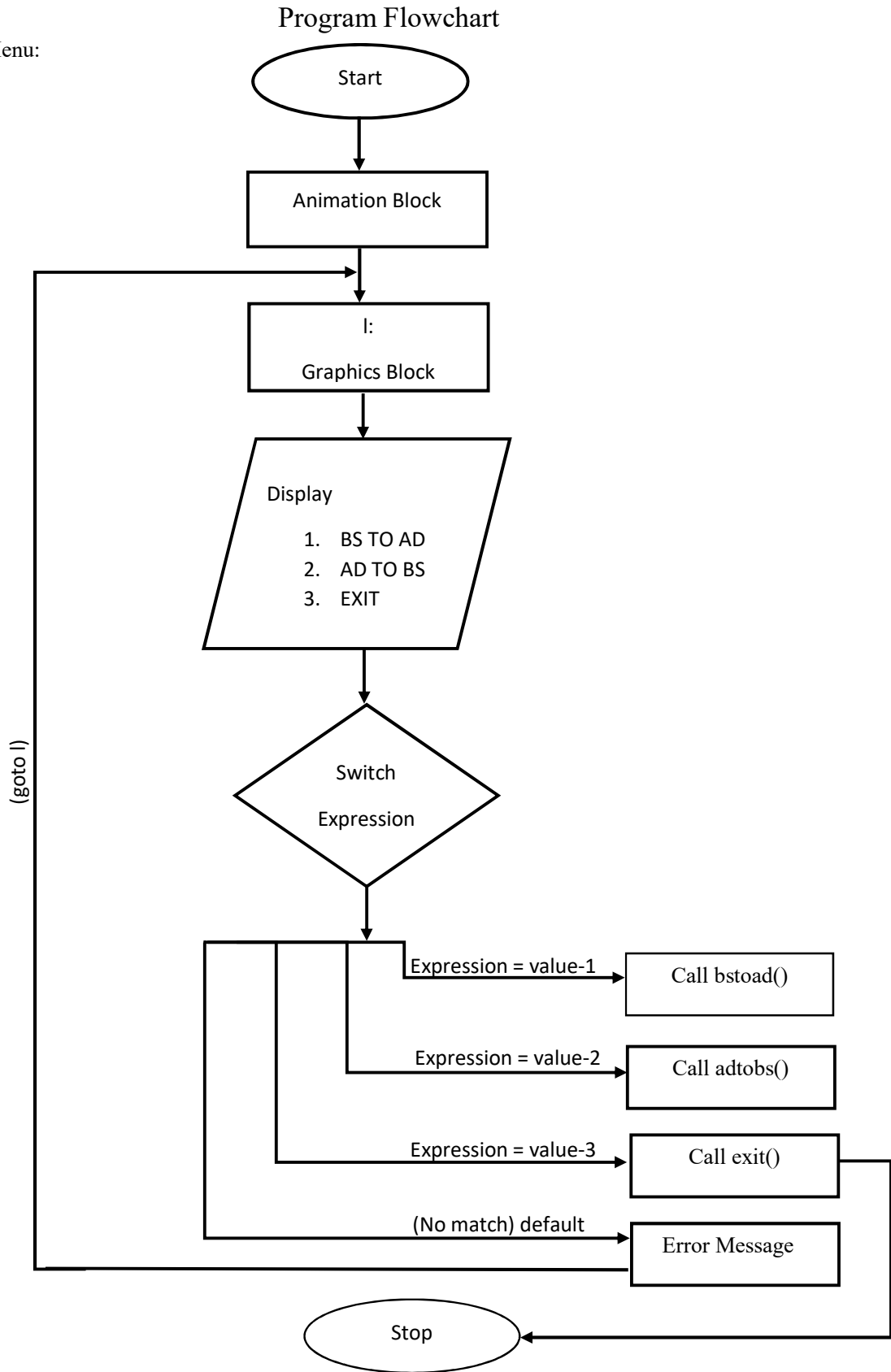


Fig: Flowchart of main menu

To convert date from BS to AD:

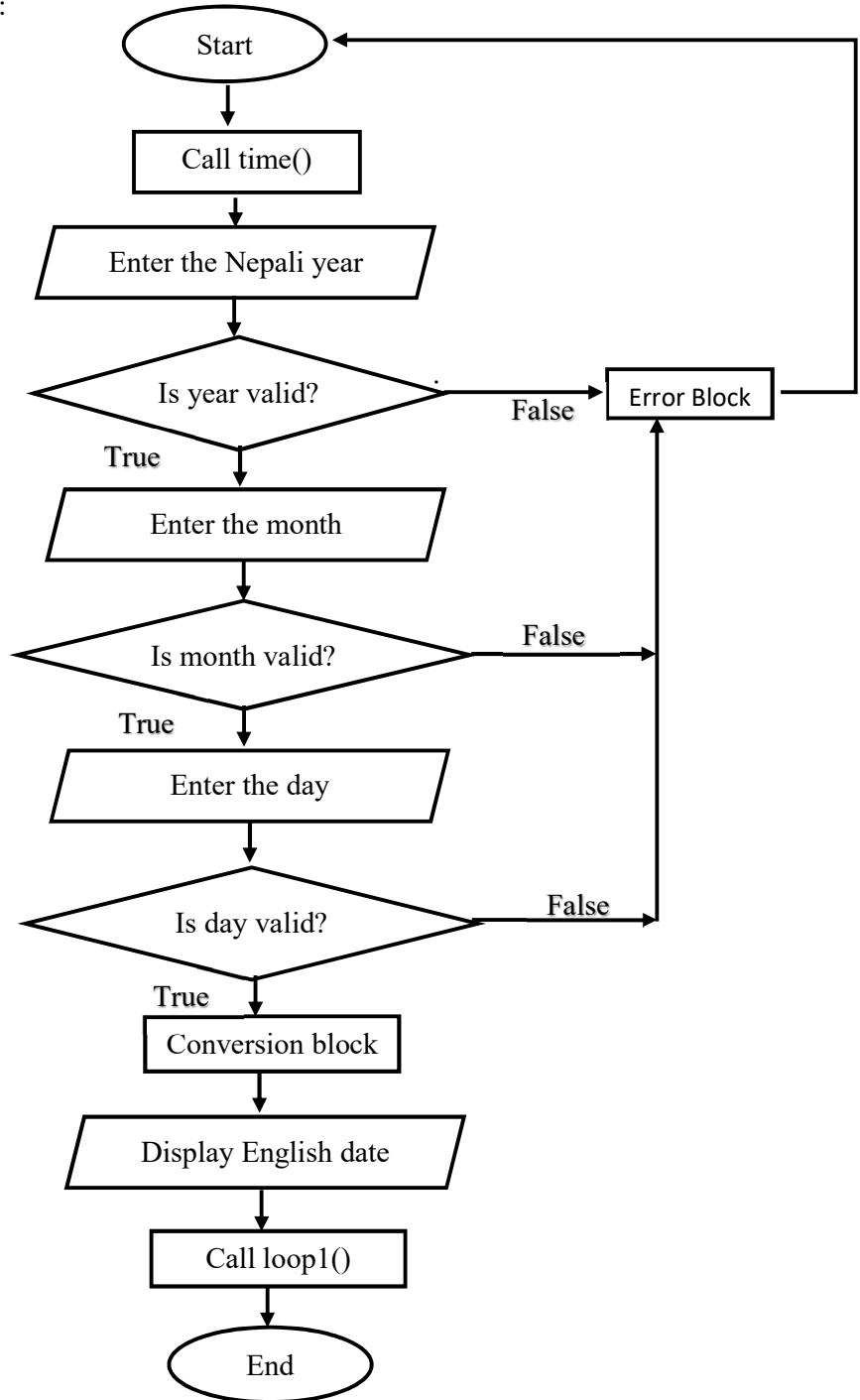


Fig: Flowchart of bstoad() function.

To convert date from AD to BS:

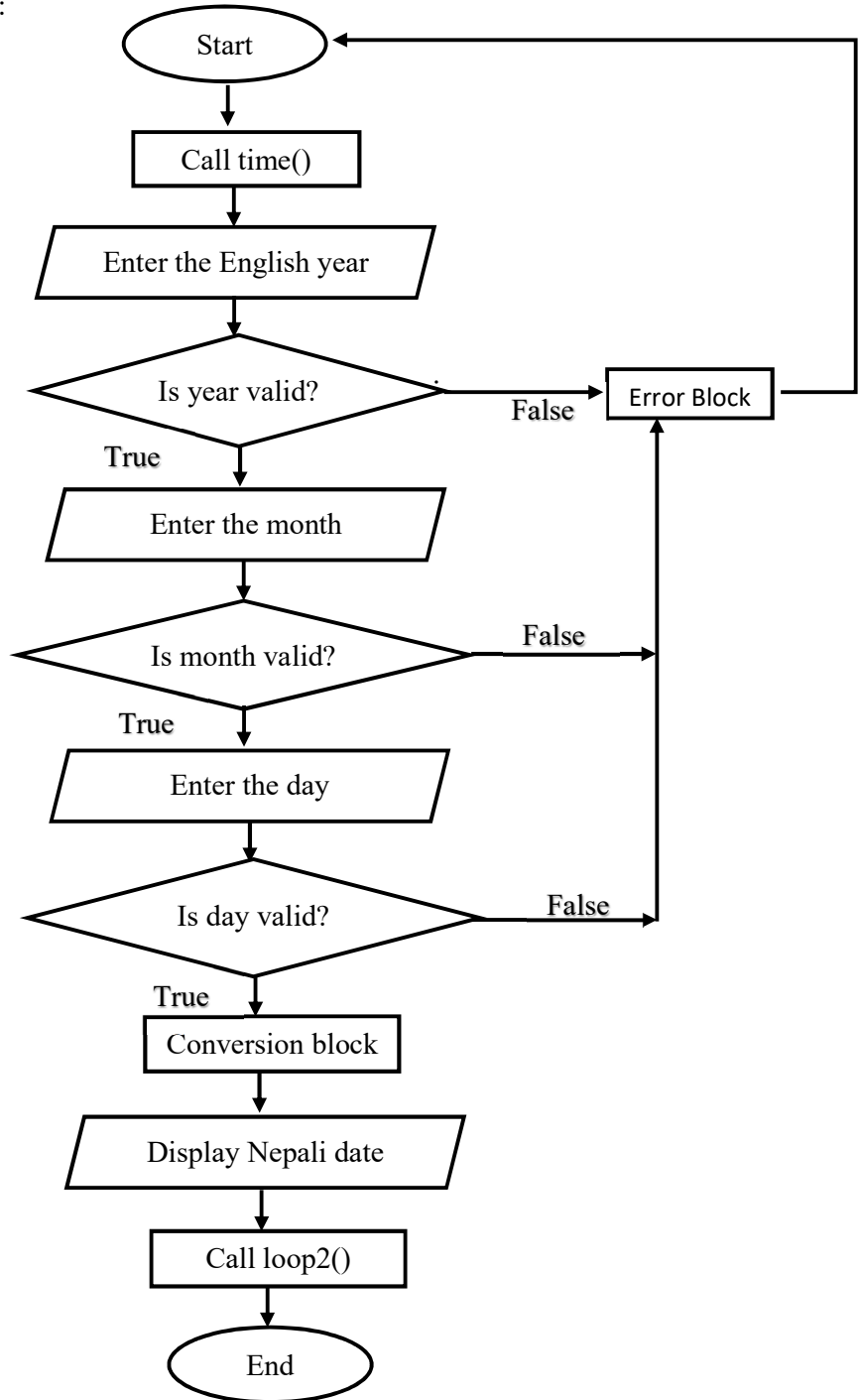


Fig: Flowchart of adtobs() function.

Exit Module:

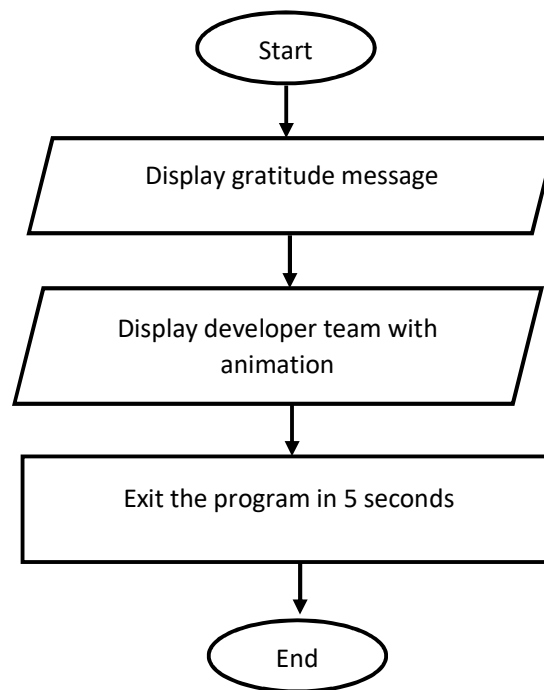


Fig: Flowchart of exit() function.

Function Used in the Program

Some user defined functions used in our date converter are mentioned below with their basic deeds:

- `int main(void)`
This is mandatory user defined function which include some input instruction and has linked `bstoad()`, `adtobs()`, `exit()` and many other function.
- `void bstoad(void);`
This function takes the Nepali date as input and convert it into desired date in Gregorian calendar.
- `void adtobs(void);`
This function takes the English date as input and convert it into desired date in Nepali calendar.
- `void time(void);`
This function displays system time using the time function under `<time.h>` header file.
- `void exit(void);`
This function exits the program in five seconds.
- `void main2();`
This function is similar to the main function but does not include any animation section.
- `void leftrect(void);`
This function creates a rectangular box at the left side of the screen using `gotoxy()` function and some hex characters.
- `void rightrect(void);`
This function creates a rectangular box at the right side of the screen using `gotoxy()` function and some hex characters.
- `void loop1(void);`
This function loops the `bstoad()` module and also link main module with the `bstoad()` module.
- `Void loop2(void);`
This function loops the `adtobs()` module and also link main module with the `adtobs()` module.
- `int leap(int iey);`
This function is used to check whether the value in `iey` variable holds well with leap year condition or not and returns value correspondingly.

Output Snapshot

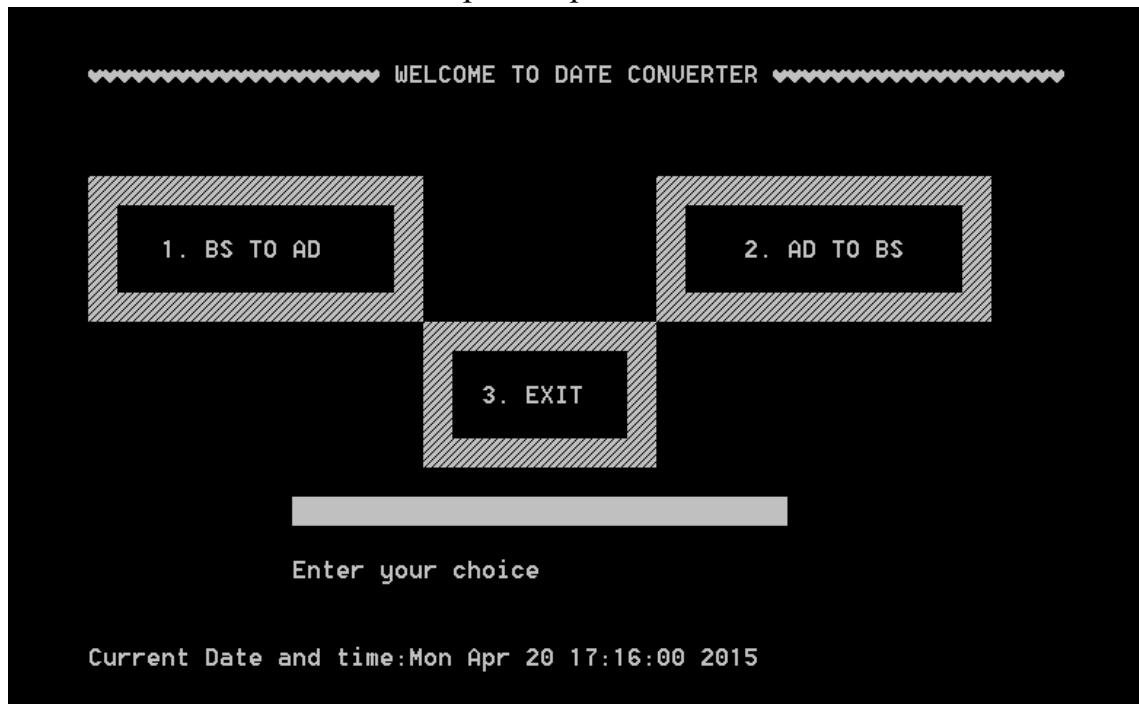


Fig: Snapshot of main() module.

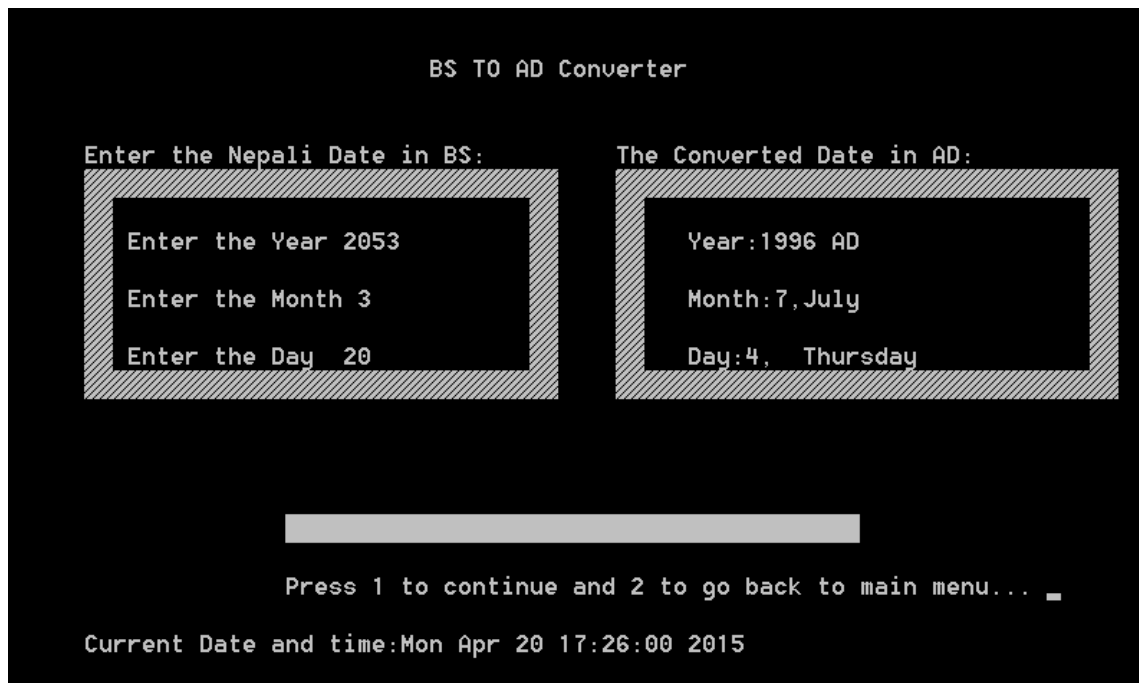


Fig: Snapshot of bstoad() module.

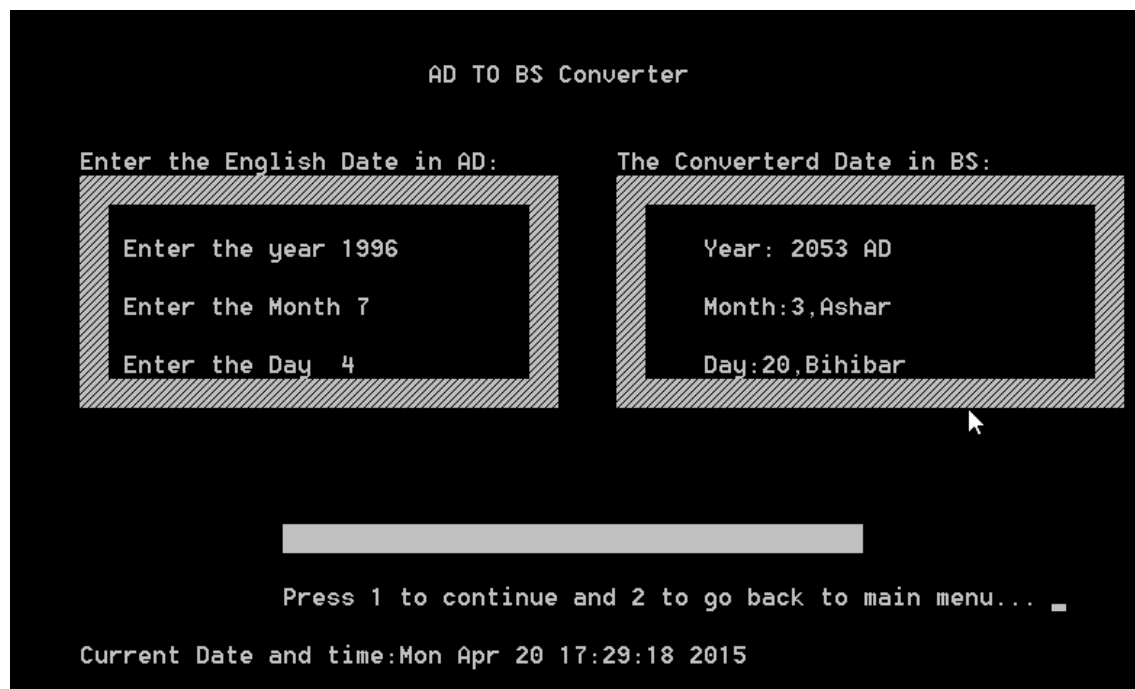


Fig: Snapshot of adtobs() module.

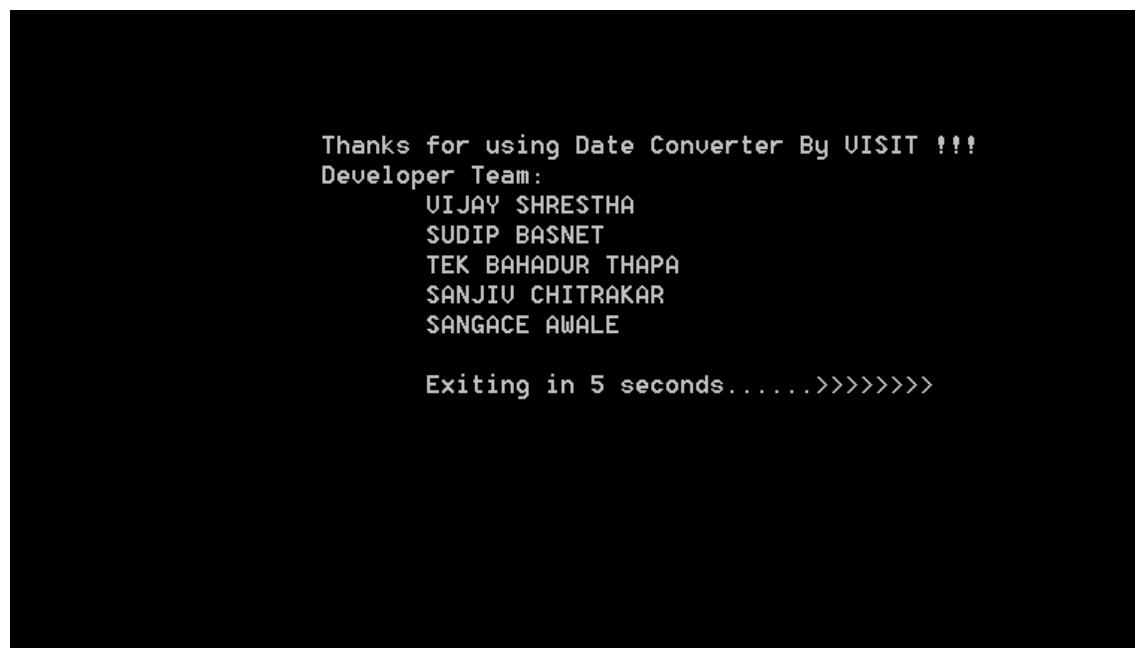


Fig: Snapshot of exit() module.

Conclusion

The project “Date Converter in C- language” was successful within the time limit. Almost all of the predetermined objectives of the system was fulfilled by the developed system. After the introduction of the system it was easier for the people to convert the date from Nepali calendar to date in Gregorian calendar and vice versa. People were able to convert date in fraction of second with 100% accuracy and precision.

So the project of developing date converter using C was a success.

References

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- [5] Programming In ANSI (By E Balagurusamy, 5th Edition)