

# Grade Processing System Using Visual Basic 6.0

**Kansham Anghun Maring<sup>1</sup>, Ningthoujam Sanjit<sup>2</sup>, Kansham Modar Maring<sup>3</sup>**

Computer Science and Engineering, Dr. B R Ambedkar National Institute of Technology, Jalandhar, India<sup>1</sup>

Computer Science and Engineering, National Institute of Technology, Yupia, India<sup>2</sup>

Scientific Officer, NIC, DeitY, Government of India<sup>3</sup>

**Abstract:** This paper presents how to develop software for grading system in Microsoft Visual Basic 6.0 programming language. The paper uses Microsoft Access as Back-End and Graphical User Interface (GUI) design in Visual Basic as Front-End. The Front-End serve as a platform to select the branch, year, semester and finally the grades obtained in each paper. The details of thus selected conditions viz., course code, course title, credits of each paper, and total credit are brought to the Front-End by connecting to a Microsoft Access database. Then the Grade Point Average (GPA) or Cumulative Grade Point Average (CGPA) is calculated accordingly.

**Keywords:** Visual Basic, Grade Processing System, GPA/CGPA, Front end, Back end, Graphical User Interface (GUI), Database, Debug.

## I. INTRODUCTION

It has been observed that the computation and compilation of students' results with the use of manual and some general purpose off shell packages is time consuming, creates fatigue and prone to errors. It becomes tedious on the part of the record or file handlers to proficiently manage them in time for documentation and file submission to higher education authorities. In finding a solution to the problem of interpreting students' scores, grade point average, and cumulative grade point average we go for Microsoft Visual Basic 6.0 programming language. Visual Basic is derived from the BASIC programming languages. It is a Microsoft window programming language created in an integrated development environment (IDE). The wide spread use of BASIC Language with various types of hardware platform led to many enhancement to the languages with the development of Microsoft windows graphical user interface (GUI) in the late 1980's and the early 1990's. Visual Basic is the worlds' most widely use Rapid Application Development (RAD) language, is the process of rapidly creating an application. The following reasons urge us to choose the Microsoft Visual Basic as the developing tool:

- Easy development.
- Supports modular programming.
- It produces a Graphical User Interface.
- Flexibility and its ability to provide the developer and user with possible hints.

The proponents of the work is to:

- Provide accurate and timely results with less effort.
- Provide a reliable and error-free grade processing.
- Less file handling and high storage.
- Establish performance authentication framework in academia.

The rest of the paper is organized with literature survey in section II followed by description of designed grading system along with block diagram in section III. Then

experimental results are presented in section IV followed by conclusions in section V.

## II. LITERATURE SURVEY

In [1], R.E. Okonigene et al. examines the inadequacies involved in the manual method of record keeping and computation of grade point average (GPA) and thus proposes a solution by developing a software system using Microsoft (MS) Visual Basic® (VB) 6.0. The software was developed and tested with respect to the peculiar situations and problems associated with the educational systems in Nigeria Universities. In [2], Zlatko J. Kovačić et al. developed a grading system using Excel's user-define functions. The system reduces the workload to lecturers because of growing enrolment in distance education that increases the student-to-lecturer ratio. In [3], Tan Peng Fei et al. analyses various VB Programming Automatic Scoring Methods based on Windows API and API Hook. The paper stimulates a method of whole process in artificial scoring by applying a method of combining dynamic scoring with static scoring-making both dynamic evaluations of the function of event codes of students' programs and static measurements of interfaces' designs respectively.

## III. DESIGNED GRADING SYSTEM

This section is sub-divided into:

### A. Block Diagram of the designed Grading System

The block diagram of the designed grading system is given in figure 1. The action part indicates either we are selecting any choice or clicking to a command button (debugging or running the code internally). On the other hand, the output part shows the effect of the previous action indicated by the arrow. Actually, due to the action one may take to another form via the database. For instance, the action "**Run the GUI**" will take the control to form1 showing the GUI interfacing users (see figure 2). Similarly, an arrow originates from "**GUI interfacing users**" to "**Select Branch, Year, Semester**" which means

that from that **Form1** (GUI interfacing users) one can perform action to select branch, year and semester. In doing so, one will be taken to another form; **Form36**(see figure 3) a GUI to enter the obtained grades.

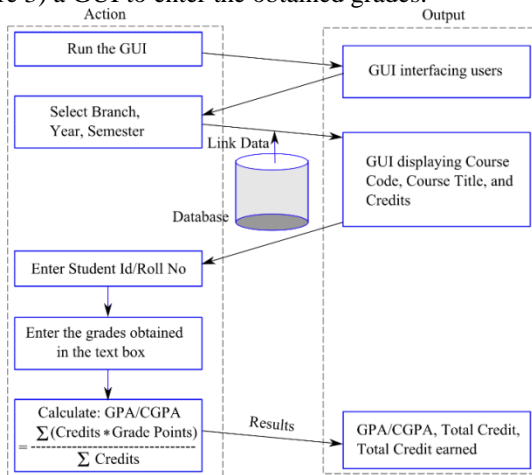


Fig. 1. Block diagram of the designed grading system.

The database in figure 1 contents the details of each subject/paper; course code, course title, and credits. The details from this database will be linked to another form when we select any combination of branch, year, and semester. The data so linked is seen in figure 3.

#### B. GUI interfacing users

The figure below shows the graphical user interface that allows the users to select any branch then year and semester at one go. When CS->2<sup>nd</sup> Yr 1<sup>st</sup> Sem is selected as in figure 2, the GUI will take you to another form linking the database of Computer Science (CS) 2<sup>nd</sup> Year 1<sup>st</sup>Semester as in figure 3. This GUI is created using **Menu Editor** that can be found in Menu bar->Tools. We just build up the menu bar on the first level and then, we add sub-menus using the arrow keys to add an ellipsis before the captions. Thus, &Diploma is on the menu bar and ...&AE is under &Diploma. Items can be inserted anywhere using the Insert button.

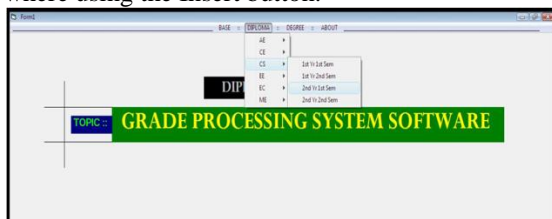


Fig. 2. GUI interfacing users

#### C. GUI to enter the obtained grades

The figure 3 shows the course code, course title, and credits for CS branch, Second Year, First Semester. For example, CS4100 is the course code for the subject Computer Organization and carries 3 credit. Similarly, in the 5<sup>th</sup> row, CS4102 is the course code for Application Software which carries 4 credit and so on. Text boxes are provided to enter the grades. The different grade letters and grade points are tabulated in Table I. The letters are made to be case in-sensitive i.e., one can enter 'A' or 'a', both will carry same grade point i.e., '5'.



Fig. 3. GUI to enter the obtained grades

#### D. GUI property settings

Some properties of the labels, text boxes, and command buttons need to be set. The property setting of labels are shown in figure 4. All the labels that need to set same properties can be selected together and set the require property at once. Figure 4 shows the setting of labels that store "Credits \* Grade Points". The visibility of these labels are set to "False" as we don't want to show this intermediate calculation value during run time but use it in final GPA/CGPA calculation.

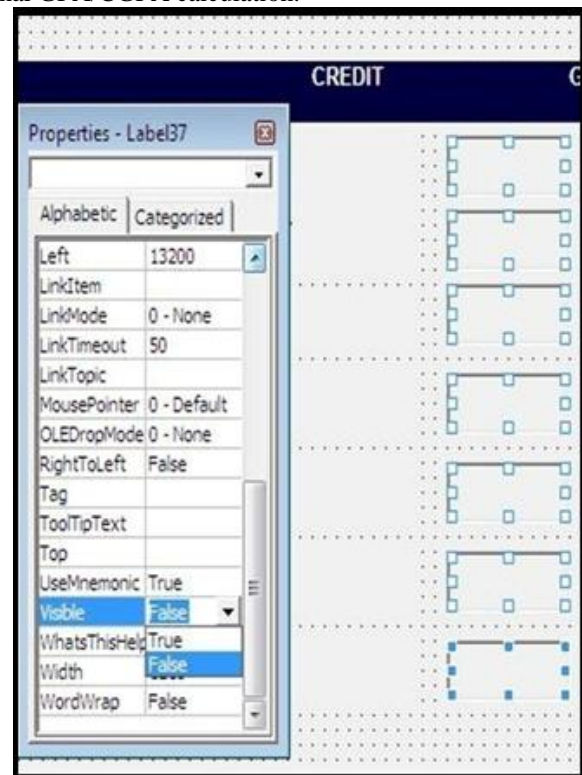


Fig. 4. Property setting of labels

#### E. Standard Controls used

The standard controls used in this work are:

- The Form
- The Label
- Frame
- TextBox
- CommandButton
- PictureBox

TABLE I: GRADE AND GRADE POINTS

Letter Grade	Grade Point	Range of marks	Description of Grade
A	5	>=75	Excellent
B	4	60-74	Good
C	3	45-59	Fair
D	2	30-44	Pass
F	0	<30	Fail
FA	0	-	Failed due to attendance shortage
FC	0	-	Failed due to copying
I	0	-	Incomplete
W	-	-	Withdrawal from a course

#### IV. EXPERIMENTAL RESULTS

The command button with the tag “GPA” calculates GPA for that particular semester. The experimental result is checked in three ways: Firstly, the GPA so calculated by our proposed system is compared with the manually calculated value and are found to be the same. Secondly, the grades are enter with different case sense (once upper-case then lower-case) and resulted values are checked. Thirdly, anyone of the subject’s grade is made to be “**I/i**” or “**F/f**” and the calculated GPA is checked. In such case, the grade points for those “**I/i**” and “**F/f**” grades should be count as zero (0).

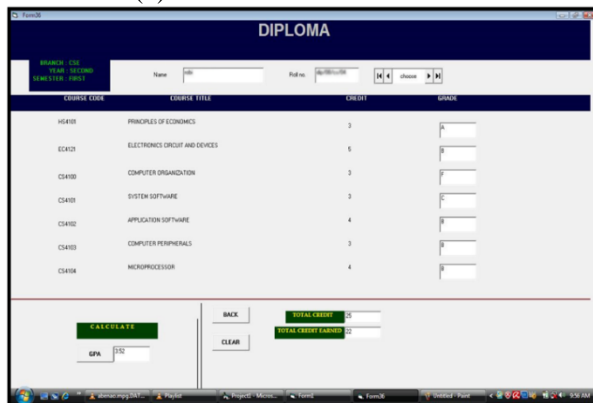


Fig. 5. Calculated GPA with upper-case grades and “**F**” grade in one subject (CS4100 Computer Organization).

Referring the calculation of GPA in block diagram (figure 1) and the grade and grade points in Table I, the GPA for the entries in figure 5 will equal to  $(3*5 + 5*4 + 3*0 + 3*3 + 4*4 + 3*4 + 4*4) / 25 = 88/25 = 3.52$  which is same as the generated value by our system (figure 5).



Fig. 6. Calculated GPA with lower-case grades and “**i**” grade in one subject (CS4102 Application Software).

Similarly, referring the calculation of GPA in block diagram (figure 1) and the grade and grade points in Table I, the GPA for the entries in figure 6 will equal to  $(3*5 + 5*5 + 3*4 + 3*4 + 4*0 + 3*3 + 4*4) / 25 = 89/25 = 3.56$  which is same as the generated value by our system (figure 6).

#### V. CONCLUSION

The students’ performance is measured by the number of credits he/she has earned or completed satisfactorily and by the weighted grade points average maintained by him/her. But different colleges/universities has different grading systems i.e., number of grades starting from ‘**A**’, ‘**B**’, ‘**C**’... or ‘**S**’, ‘**A**’, ‘**B**’... and different grade points assigning to these grades 5,4,3... or 10,9,8... respectively. Keeping these differences in mind, the proposed system can be used for any college/university with little modification in the code.

The proposed system doesn’t consider any back lock papers. So, the proposed system can be made more significant by adding some features to consider such back lock papers. It can also be more user friendly by replacing textboxes with drop down menu thus enabling the user to select from the drop down list instead of typing manually from the keyboard.

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#### BIOGRAPHIES



**Kansham Angphun Maring** did his B.Tech in Computer Science and Engineering at NERIST, Nirjuli, Arunachal Pradesh. He has completed his M.Tech in Computer Science and Engineering at Dr. B R Ambedkar National Institute of Technology, Jalandhar, Punjab in May 2014. His area of interest are Digital Image Processing, Pattern Recognition, NLP, and Wireless Communication.



**Ningthoujam Sanjit** did his B. Tech in Computer Science and Engineering at NERIST, Nirjuli, Arunachal Pradesh. He has completed his M.Tech in Computer Science and Engineering at National

Institute of Technology, Yupia, Arunachal Pradesh in May 2015. His area of interest are Mobile Communication, Mobile Computing, Wireless Sensor Network, and Design and Analysis of Algorithm.



**Kansham Modar Maring** did his B. Tech (CSE) and M.Tech (IT) at NERIST, Nirjuli, Arunachal Pradesh. He is presently working as Scientific Officer / Engineer at National Informatics Centre (NIC), Deit Y,

Government of India. His area interests are Networking, Web Designing and Computer Troubleshooting.