

| S. No | Topic | Description | Milestone 1 | Milestone 2 | Milestone 3 |
|-------|---|---|---|---|--|
| 1 | Solve a Quadratic Equation | Develop a software tool to solve any given quadratic equation with real coefficients. Your tool should be able to handle all the cases, and should visualize the complete solution step by step. | Describe the complete structure of the equation solver, and what kind of visualizations it will have. | basic code to solve a quadratic equation. | The complete code for a fixed input, with visualizations part integrated with it. |
| 2 | Find the Determinant of a Matrix | Develop a software tool to find determinant of a given 3X3 real valued matrix. Your tool should consider all the input cases, and should also visualize the solution at each step. | Describe the complete structure of the determinant finder, and what kind of visualizations it will have. | basic code to find the determinant of any matrix. | The complete code for a fixed input matrix, with visualizations part integrated with it. |
| 3 | Number Conversion | Develop a software tool to convert a number given in Binary representation as input to its equivalent decimal representation and display it. It can be any real decimal number (upto two places of decimal). Visualize the process of conversion creatively. | Describe the algorithm to be used to find the output. It should be the same one which will be visually represented in the software. | Implement the algorithm using code. The output should be available on display by this stage. | The visualization step, along with all interface design improvements should be done by this stage. |
| 4 | ADD 2 NUMBERS | Problem Statement: Implement a small software for children which takes 2 integer numbers from user and performs the summation operation. Display the process of summation of these 2 numbers using Visual Basic. Clearly display the process of how carry is forwarded in summation using Visual Studio Graphics. | Overall Plan of the software to be made. Algorithm to be used. | Basic implementation of the software covering all the boundary cases. | Full Implementation including the graphics. |
| 5 | SEARCH (Linear) | Implement a small software to search an element from a list of elements. Element can be anything for e.g. Integer, float, string, etc. Display the list of elements to the user (read from a file) and ask for the element to be searched. Using Visual Basic and graphics show how the search proceeds. | Overall Plan of the software to be made. | Basic implementation of the software covering all the boundary cases. | Full Implementation including the graphics. |
| 6 | SEARCH (Binary) | Implement a small software to search an element from a list of elements. All the elements are of similar data type (Integer, float, string, etc.) and are sorted. Using Visual Basic and graphics show how the search proceeds using Binary Search Algorithm. | Overall Plan of the software to be made. | Basic implementation of the software covering all the boundary cases. | Full Implementation including the graphics. |
| 7 | CALCULATOR | Design a graphical representation of a calculator with the following functionalities: addition, subtraction, multiplication and division | Overall Plan of the software to be made. | Graphics of the software with some fixed input. | Full Implementation covering all the cases. |
| 8 | SORTING(INSERTION) | Implement insertion sort and visualize the intermediate steps creatively (comparison, swapping) | Overall Plan of the software to be made. | Implement the algorithm using code. The output should be available on display by this stage. | Full Implementation of working software. |
| 9 | SORTING(SELECTION) | Implement selection sort and visualize the intermediate steps creatively (comparison, swapping) | Overall Plan of the software to be made. | Implement the algorithm using code. The output should be available on display by this stage. | Full Implementation of working software |
| 10 | Password Strength Checker | Implementation of a basic password strength checker which can be used in various platforms, user can check whether the password he/she going to use in future how strong or weak it is. | Basic understanding of Visual Basic and problem statement. Listing down the requirements understanding the necessity. | Complete design of the framework and UI, tree structure of the algorithmic approach (Like what will be decided as strong, medium and weak password) and implementing in Visual Studio platform. | Covering all corner cases, remembering all previously used password and not re-using them, designing a formulae and thresholding for the password and show output. |