Academic Year: 2020

Course Title: Object Oriented Programming Lab

Session: 2019

Semester: 2nd

Course Code: CS-241L

CS-241L Object Oriented Programming Lab 01

Type of Lab: Open Ended **Weightage: 5%**

CLO 1: CLO's.

State the Rubric	**Cognitive/Understanding**	CLO1	Rubric A

Rubric A: Cognitive Domain

Evaluation Method: GA shall evaluate the students for Question according to following rubrics.

CLO	**0**	**1**	**2**	**3**	**4**
CLO1	Mention Milestones with respect to rubrics	Problem 1	Problem 2	Problem 3	Problem4

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Lab 1

BS-Computer Science

Object Oriented Programming

Target: Visual Studio Introduction, Debugging

Visual Studio:

Microsoft Visual Studio is an integrated development environment from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps.

Why you need to learn how to use debugger?

What is debugger?

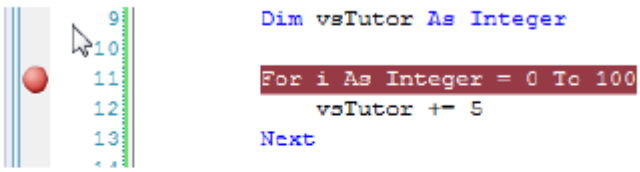
A tool allows you to monitor your code's variable value at runtime
Identify which code is incorrect.

Quote: "If there's a single feature of Visual Studio that every developer uses and is essential to the development process it is the built-in debugger"

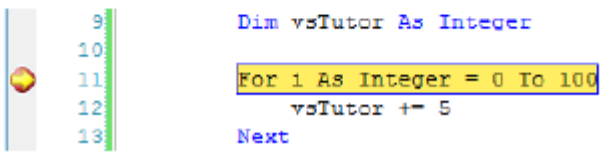
Setup breakpoint

Breakpoints **pause** the execution of the code and allow developers to examine controls and variables before allowing the program to continue to execute.

Looks like:



Execution paused at runtime:



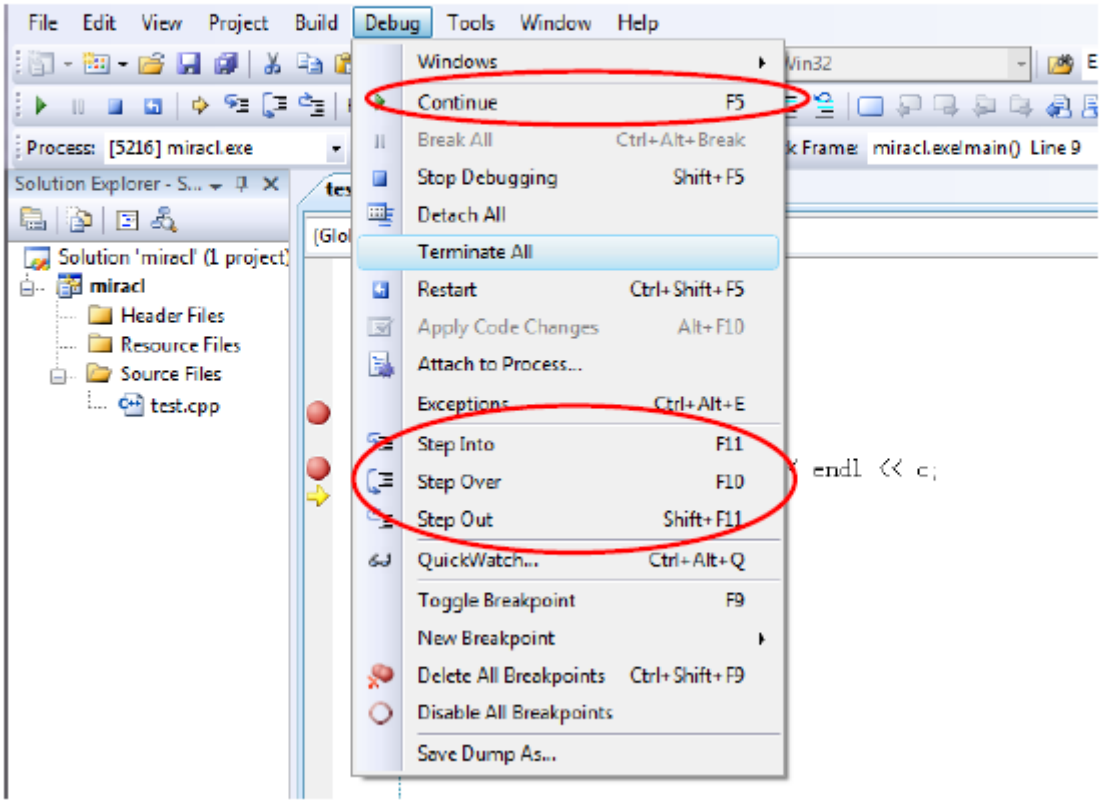
How to set up a breakpoint in a program?

- Move your mouse to the left margin of a line you want to pause
- Then, left click your mouse, and you will see a red circle appears. It means a **breakpoint** is set at this line.

Important windows:

- Watch Window: It allows monitoring of any object which can simply be highlighted in the code window and dragged to the Watch window. The Watch window monitor objects regardless of whether they are in scope or now.
- Locals Window: It cannot have objects dragged into it and shows all objects that are currently in scope.
    - A powerful feature of the Locals window is that it allows the objects to by modified.
- Autos Window: It shows the objects used in the execution of the current statement.

Runtime Control



Step Into(F11): executes the next line of code that the program would normally execute (if the current line is a function invocation, it will jump into the function execution)

Step Over(F10): proceeds to the next line of code in the current procedure, this means that other routines (such as functions) are called it will not proceed into those routines but simply execute them and continue to the next line of the current code block.

Step Out (shift+F11): will move to the line of code which called the current process or the next breakpoint if that comes first.

Problem Set:

Perform the following programs in visual studio and also practice debugging.

1. Write a C++ program that creates and initialize 3 variables of different types, create pointers for each variable and access those variables using pointer references and show memory size of each variable using (sizeof ()) function.
2. Write a C++ program that creates a user defined function with pointers as arguments of two inputs taken by user and swap these numbers to each other.
3. C++ Program to insert values in array of 10 elements and display data entered by using pointer notation using user defined function.
4. C++ Program to insert values in array of 8 elements and sort array using pointers with user defined function

Home Assignment

- Understanding of pointers with functions and arrays.