VITAL INFORMATION

Subject(s):	Careers, Computer Fundamentals 1-2
Topic or Unit of Study:	Software Development
Grade/Level:	9-12
Objective:	At the conclusion of this lesson students will be able to:
	1. Create a Console application in Visual Basic
	2. Access command line arguments in a program.
	3. Write to the standard output (stdout) device.
	4. Port their Homework Calculator to a new environment.
	5. Identify the "entry point" of a Console application.
	6. Execute a command line application.
Summary:	Students write their first command line (also called Console) application and port their earlier Homework Calculator to this new environment. They create a Console Application project in Visual Basic, pass variables to the program through command line arguments, and return output to users through the Console.

IMPLEMENTATION

Learning Context:	Students finished several weeks ago with a Homework Calculator, which was part of a successful activity. One justification of the somewhat complicated design we used for the program was that it would allow us to easily port the calculator to a new environment. Until now students were never given the opportunity or knowledge to make that port. It's time to change that.
Procedure:	1. The activity is written up in detail on a web page which is printed and attached to this lesson plan. Although students can read the instructions on their computers, they probably have questions and comments that interest the entire group. We therefore generally conduct such activities at the front of the room near the screen where everyone can see and hear. Such is the plan for this activity.
	2. Work with the students through the background information, instructions, and their questions, and then set them to work porting their Homework Calculators from the GUI environment to the Console.
	3. When students have completed their work, have them demo it for

assessment and then explain how they can execute it by using Run…
from the start menu or from the Command Prompt after navigating to
the appropriate directory.

**Differentiated
Instruction:**
There is little differentiation in this assignment. Students may work at
their own pace as soon as group discussion is complete. They will
begin with their personal Homework Calculators, so every student will
have a different program.

**Sample Student
Products:**
Input and output are only numbers, so screen shots aren't useful. The
web page includes teacher-generated sample code. The equations that
students have used for the Homework Calculator have been collected
and archived.

Collaboration:
Students will work individually.

Time Allotment:
1 class period. 55 Min. per class.

**Author's Comments
& Reflections:**
Reflections will follow in a diary entry.

MATERIALS AND RESOURCES

**Instructional
Materials:**
The web page for this activity is attached.

Attachments

1. **Console Calculator**

Resources:
- Technology resources:
  Internet Explorer, Visual Basic

STANDARDS & ASSESSMENT

Standards:

■ ■■ **AZ- Career and Technical Education Programs**
- **Level :** Career Preparation (Grades 10 - 12)
  - **Program :** Information Technology CIP No. 15.1200
    - **Option :** Software Development - Option C
      - **Competency :** 27.C DEMONSTRATE PROGRAM ANALYSIS AND DESIGN
        - ■ **Indicator :** 27.1c List the steps in a program development cycle
      - **Competency :** 28.C USE SOFTWARE TO CREATE PROGRAMS
        - ■ **Indicator :** 28.1c Enter and modify code using a program editor
        - ■ **Indicator :** 28.2c Compile and execute programs
      - **Competency :** 31.C EMPLOY MODULARITY IN WRITING PROGRAMS
        - ■ **Indicator :** 31.1c Call standard library functions
        - ■ **Indicator :** 31.2c Utilize parameters to pass data into program modules
        - ■ **Indicator :** 31.4c Write and use modules that return values
      - **Competency :** 36.C IDENTIFY WAYS TO INPUT AND OUTPUT INFORMATION
        - ■ **Indicator :** 36.1c Provide user with means to input data on a console and/or GUI
        - ■ **Indicator :** 36.2c Use input/output statements in a program
        - ■ **Indicator :** 36.3c Assign input to variables

Assessment/Rubrics: The output of this activity is a small program of approximately 10 lines. The most critical lines should have been copied directly from students' Homework Calculators and not require careful scrutiny. The others can be copied nearly verbatim from the web page. This activity will not appear on the quarter grades. Therefore, for assessment it should suffice to skim the code and verify functionality with a quick demo. This provides an opportunity to instruct students on how to run their program.