

Overtime Paycheck

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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: <ol style="list-style-type: none">1. Program an if/then/else statement in Visual Basic.2. Compare numeric values.3. Explain workplace standards such as the 40-hour work week and overtime pay.4. Test a boundary case.5. Set a breakpoint and observe program execution.6. Define black and white box testing.
Summary:	Students modify their taxed paycheck program that calculates gross pay based on number of hours worked and an hourly rate to account for overtime. They test the boundary case (40 hours) by observing program execution (white box testing) as well as output (black box testing).

IMPLEMENTATION

Learning Context:	Students have recently finished a simpler paycheck program and are ready to deal with another programming construct, the if/then/else. While this program is simple enough not to require a flowchart (in my opinion), the subsequent program is. We'll start simple now, learn about flowcharts next, and then tackle the more difficult problem. Instead of flowcharting, we will visit testing.
Procedure:	<ol style="list-style-type: none">1. Display for students the class web page where there is a screen shot of the overtime calculator, a link to a dated PowerPoint presentation with details of the calculation, and additional instructions. A printout is attached. It should contain all the information that students need.2. When students are finished, test the program and inspect the source code. Evaluate based on the rubric.
Differentiated Instruction:	Little variation is allowed. Students can refer to the web page as often as they wish.

Sample Student Products:	The result should look significantly like the screen shot on the web page except that the students will probably be much more creative.
Collaboration:	Students will work individually.
Time Allotment:	2 class periods. 55 Min. per class.
Author's Comments & Reflections:	Reflections will follow in a diary entry.

MATERIALS AND RESOURCES

Instructional Materials: Web page for the activity. Note that we are calling it Regular Paycheck in class rather than Overtime Paycheck. The previously described Regular Paycheck is now Simple Paycheck in class.

Attachments

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| 1. Overtime Paycheck |
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Resources:

- Technology resources:
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 :** *3.0 DEVELOP APPROPRIATE WORK HABITS FOR SUCCESSFUL EMPLOYMENT IN INFORMATION TECHNOLOGY
 - **Indicator :** 3.3 Complete tasks accurately
 - **Indicator :** 3.4 Complete tasks with minimal supervision
 - **Competency :** *12.0 EXPLORE LEGAL AND ETHICAL ISSUES RELATED TO INFORMATION TECHNOLOGY
 - **Indicator :** 12.5 Identify workers' rights regarding workplace issues including safety, drug testing, harassment, discrimination, privacy, etc.
 - **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
 - **Indicator :** 28.3c Correct syntax errors
 - **Indicator :** 28.5c Use recognized conventions for naming identifiers and formatting code
 - **Indicator :** 28.6c Employ debugging strategies to eliminate errors
 - **Indicator :** 28.7c Access program and language documentation
 - **Competency :** 29.C TEST AND DEBUG TO VERIFY PROGRAM OPERATION
 - **Indicator :** 29.2c Identify boundary cases and generate appropriate test data
 - **Competency :** 30.C WRITE CODE TO PERFORM ARITHMETIC CALCULATIONS
 - **Indicator :** 30.2c Interpret and construct mathematical formulas
 - **Competency :** 32.C WRITE CODE USING CONDITIONAL STRUCTURES
 - **Indicator :** 32.1c Compare values using relational operators (=, >, <, >=, <=, not equal)

■ **Indicator** : 32.3c Select an appropriate decision structure for a given situation

■ **Indicator** : 32.4c Construct decision statements such as if/else, if, switch case

• **Competency** : 34.C USE SIMPLE DATA TYPES AND STRINGS

■ **Indicator** : 34.1c Declare numeric, Boolean, character and string variables

■ **Indicator** : 34.3c Declare and use constants in a program

■ **Indicator** : 34.4c Write assignment statements for initializing and modifying variables

• **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:

Rubrics

1. <u>Overtime Paycheck</u>
