

Debugging

Networks and Embedded Software

Module 5.1.3 (optional)

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Debugging (1)

- Software Bug
 - Error, flaw or fault in a computer program
 - Produces incorrect or unexpected results
 - Prevents correct operation of the program
- Debugging
 - Process of finding and resolving software bugs



Debugging (2)

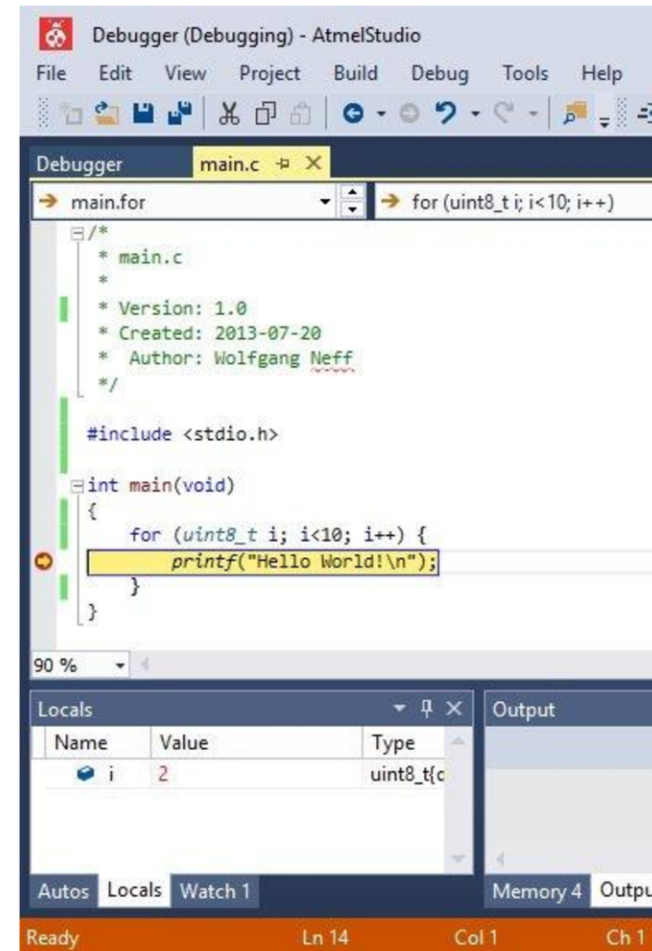
- Techniques
 - Print debugging
 - Display the value of variables
 - Indicate the flow of execution
 - Software supported debugging
 - With the aid of a debugger
 - Post-mortem debugging
 - Analyze core dumps of a crashed process
 - Hardware debugging

Errors

- Types of Error
 - Syntax error
 - Prevents that the source code gets compiled
 - Semantic error (logic error)
 - Prevents a program from correct operation
 - Does not cause abnormal termination
 - Run-time error
 - Provokes an abnormal termination (crash)
 - Example: disk full or write protected

Debugger

- Features
 - Single step execution
 - Breakpoints
 - Displaying variables
 - Changing variables
 - Visual feedback



Hardware Debugging

- Probes available
 - Circuit analyzer ([multimeter](#))
 - Oscilloscope
 - Logic analyzers
- Power-On Self-Test ([POST](#))
 - Beep code if test fails
- Hardware debug interface
 - Query the state of the system

JTAG

- Joint Test Action Group
 - Hardware debug interface
 - Dedicated debug port
 - Implements a serial communications interface

