

# Software Development and Programming Languages

## Programming Languages

- Vehicle for humans to communicate instructions to computer for execution
- Syntax: rules or protocols for using components of language including keywords, symbols to form statements for translation to computer

## Compiled or Interpreted Languages

- Compiled: Grouping of languages that are translated into several machine languages before execution – most software applications are written in languages that are compiled such as Visual C++
- Interpreted: Translation occurs during execution statement by statement. Scripting languages utilized by browser are examples of interpreted languages

## Generations of Programming Languages

- 1<sup>st</sup> – written in machine language; binary set of instructions; statement for statement as to actions of computer
- 2<sup>nd</sup> – introduction of symbolic interaction; assembly language; statement for statement as to actions of computer
- 3<sup>rd</sup> – symbolic interaction; compiled languages with syntax; COBOL
- 4<sup>th</sup> – software generates program statements from input of user; user interacts with software and uses human terms to query databases, etc

- 5<sup>th</sup> – visual or GUI interface for programmer; Visual Basic and other family of “visual” products; facilitates testing and language construction

## Object Oriented Languages

- New way of thinking about program construction
- Combines operations and data by logical division into objects
- Reusable code
- Languages include Java, C++, C#, Smalltalk