

Systems Development

Implementation

<http://lbgeeks.com/gitc/systemsimpl.php>

May 14, 2007

- **What is Implementation?**
- **Coding Standards**
 - **Naming Conventions**
 - **Style Guidelines**
- **Schedule Reminders**

What is Implementation?

- **Life cycle: requirements, design, implementation, testing**
- **Requirements ask, “What should we build?”**
- **Design asks, “How should we build it?”**
- **Testing asks, “Did we build it correctly?”**
- **Implementation is the building!**

Coding Standards

- **Grammar rules in natural languages:**
 - Capitalize proper nouns, sentences
 - Subjects and verbs must agree in tense
 - Nominative, accusative, dative cases
- **Goal: make language easier to understand**
- **Similar rules are needed for artificial languages, such as software code**
- **Goals:**
 - Easier to understand as well
 - Also make maintenance easier
- **Each language has unique guidelines**
- **We use two: SQL, Visual Basic**

Naming Conventions

- **Forms and Tables**
- **Attributes, Methods, and Objects**
- **Constants**
- **Keywords**

Forms and Tables

- **Name tables in plural with leading capital**
- **Try to use one word:**
 - **Girker (library book catalog)**
 - **Hodvatser (items currently in inventory)**
- **Give form same name as associated table**
- **Columns same as classes (next page)**
- **In SQL, case makes no difference outside of string expressions**
- **Oracle automatically converts to upper case unless otherwise specified**

Attributes, Methods, and Objects

- **Classes like tables except multiple capitalized words, no spaces:**
 - GeradaranGirker (library books as class)
 - MasHodvatser (item used as a part)
- **Objects same as class, but initial lower case:**
 - GeradaranGirker azatGirker;
 - MasHodvaster geramekenaMas;
- **Attributes, methods same as objects:**
 - azatGirker.gerogh
 - germekenaMas.tiv = stanalTiv()
- **Use one word when meaning obvious**
- **Names must be descriptive**

- **Use all upper case letters**
- **Separate words with underscores**
- **Examples:**
 - **GYUMRI_GERADARAN_TIV = 27;**
 - **YEREVAN_GERADARAN_TIV = 32;**
 - **KAPUYT_GUYN = 0x0000FF;**
 - **SEV_GUYN = 0;**

- **Access automatically capitalizes keywords:**
 - **If**
 - **While**
- **SQL tradition is keywords all upper case:**
 - **SELECT * FROM Patverner;**
 - **DELETE FROM Patverner WHERE Banali = 7;**

- **Statements**
- **Function and Subroutine Calls**
- **Boolean Computations**
- **Parameter Checking**
- **Early Return Policy**
- **Comments**

- **No special rule for simple statements**
 - $x = a + b;$
- **Compound Statements**
 - Use a comment where appropriate
 - Put keywords on separate line
 - Example:

```
` Put a and b in numerical order
If a > b Then
    temp = a
    a = b
    b = temp
End If
```

Function and Subroutine Calls

- **Access will automatically capitalize names as declared:**
 - Type “stanaltiv()”
 - Converted to “stanalTiv()”
 - Use this as verification name typed directly
- **SQL ignores case on calls**
 - No difference between the two

Boolean Computations

- **Use only boolean variable expressions in If**
- **Don't call function directly!**
- **Instead use two steps:**
 - **Assign variable a function return value**
 - **Use variable in If expression**
- **Makes debugging easier:**
 - **Set breakpoint on function**
 - **Can stop and check evaluation**

Parameter Checking

- **Check all parameters for validity upon entry of function or procedure**
- **If error in range or value, exit with error code**
- **Otherwise complete function as required**

Early Return Policy

- **Exit function or procedure at error detection**
- **Check success or failure state of operation**
- **Return as soon as some operation fails**
- **Result is much cleaner program form**

- **Put one or two line description at start of function or procedure**
- **Explain all variable declarations**
- **Comment before action taken, e.g. comment about what If is doing comes before If**
- **Need one comment per decision point**

Class Schedule Reminders

- **This is the only unit lecture!**
- **Q&A sessions at 19:00:**
 - **Wednesday, May 16**
 - **Monday, May 21**
 - **Wednesday, May 23**
- **Next Unit Starts May 30**
 - **May 28 is a holiday**
 - **No quiz! Assignment will be checked instead!**
 - **Assignment due at start of class**