软件工程

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7.2

Good Programming Practice

Consistent & Meaningful Variable Names

- **"*Meaningful*" to future maintenance programmer**
  - **ENGLISH**
- **Module contains variables *freqAverage*, *frequencyMaximum*, *minFr*, *frqncyTotl* .**
- **Maintenance programmer has to know if *freq*, *frequency*, *fr*, *frqncy* all refer to the same thing.**

Consistent & Meaningful Variable Names

- **"*Consistent*" to aid maintenance programmer**
  - **Can use *frequencyAverage*, *frequencyMaximum*, *frequencyMinimum*, *frequencyTotal***
  - **Can also use *averageFrequency*, *maximumFrequency*, *minimumFrequency*, *totalFrequency***

Issue of Self-Documenting Code

- **Exceedingly rare**
- **Can module be understood easily and unambiguously by**
  - **The programmer some times later ?**
  - **SQA team ?**
  - **Maintenance programmers ?**
  - **All others who have to read the code ?**

Prologue Comments

- **Mandatory at top of every single module**

- Module name
- Brief description of what the module does
- Programmer's name
- Date module was coded
- Date module was approved, and by whom
- Module parameters
- Variable names, in alphabetical order, and uses
- Files accessed/ updated by this module
- Module i/o
- Error handling capabilities
- Name of file of test data (for regression testing)
- List of modifications made, when, approved by whom
- Known faults, if any

Inline Comments

- **Suggestion**
  - **Comments are essential whenever code is written in a non-obvious way.**

……

/* the following statements are to determine the customer‘s level */

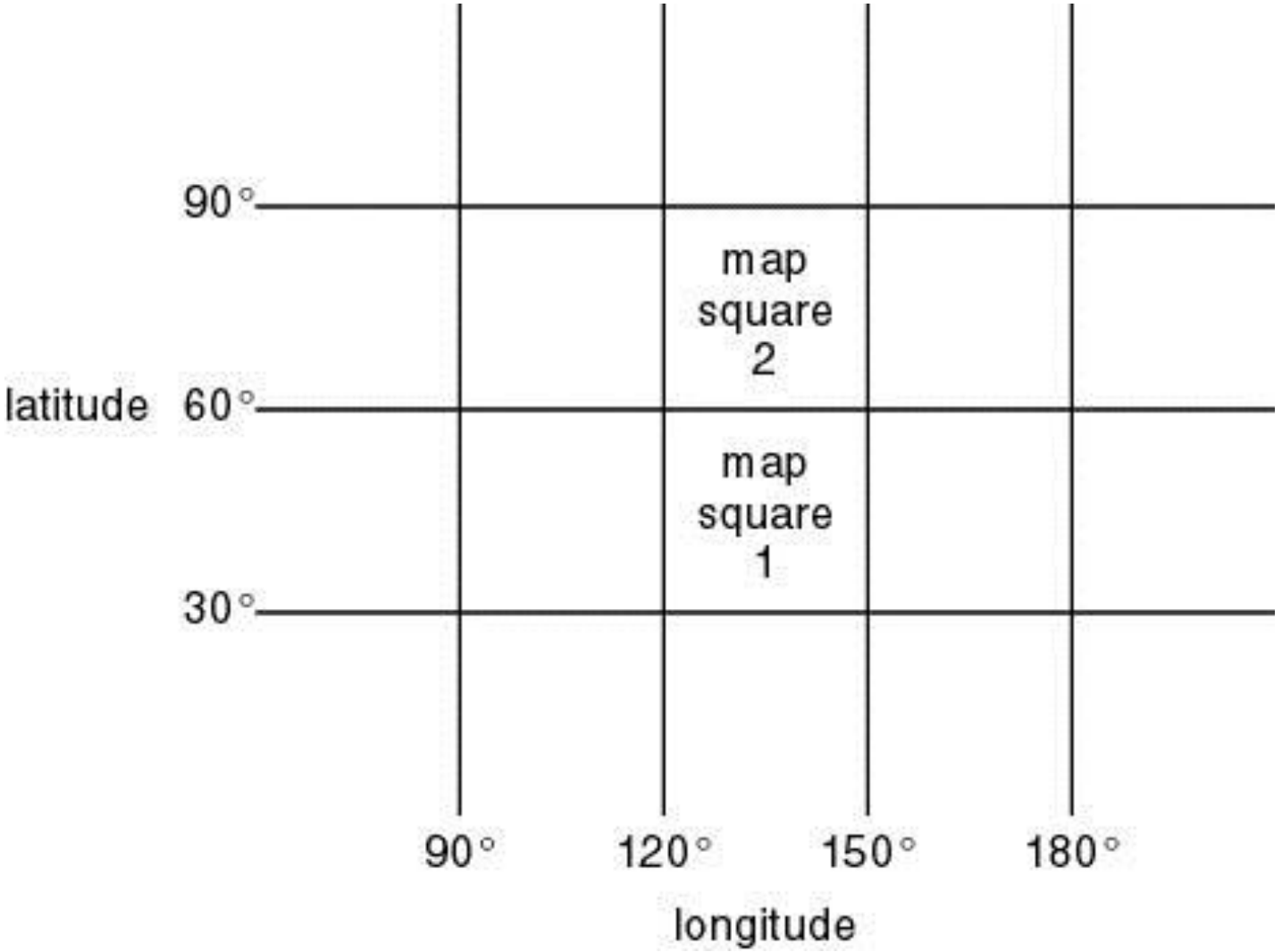
……

Code layout

- **Code layout for increased readability**
  - **Use indentation**
  - **Use blank lines**
  - **Use white space**

Nested *if* Statements

- **Example**



Nested *if* Statements

- **Solution 1. Badly formatted**

```
if (latitude > 30 && longitude > 120) {if (latitude <= 60 && longitude <= 150)
mapSquareNo = 1; else if (latitude <= 90 && longitude <= 150) mapSquareNo = 2
else print "Not on the map";} else print "Not on the map";
```

Nested *if* Statements

- **Solution 2. Well-formatted, badly constructed**

```
if (latitude > 30 && longitude > 120)
{
   if (latitude <= 60 && longitude <= 150)
      mapSquareNo = 1;
   else if (latitude <= 90 && longitude <= 150)
      mapSquareNo = 2
   else
      print "Not on the map";
}
else
   print "Not on the map";
```

Nested *if* Statements

- **Solution 3. Acceptably nested**

```
if (longitude > 120 && longitude <= 150 && latitude > 30 && latitude <= 60)
   mapSquareNo = 1;
else if (longitude > 120 && longitude <= 150 && latitude > 60 && latitude <= 90)
   mapSquareNo = 2;
else
      print "Not on the map";
```

Nested *if* Statements

- **Combination of *if-if* and *if-else-if* statements is usually difficult to read.**

  if <condition1> && <condition2>

  is better than

  if <condition1>

  if <condition2>

- **Rule of thumb**
  - ***if* statements nested to a depth of greater than three should be avoided as poor programming practice.**