1. **Programming Standards**

- Is the definition of a common set of rules that programmers must follow when participating in a project. Ensure consistency among members, make sure the code is easy to maintain, fix and update.

- **General standards of the program include:**

+ The program must be written in java language and have the extension .java

+ Using framework is JavaFX in designing application interface.

+ Using IDE is Intellij and JDK 19

+ Sync code via Github and manage code with Source Tree

+ Icons and images must be stored in separate folders.

+ Do not nest for/while more than 2 times (<= O( ))

+ Make sure the code is reusable

1. **Standards for Code Writing Style**

\* Reference and use the rules defined in standards from Oracle's Java Code Conventions

* 1. **File Suffixes:**

+ Java source .java

+ Java bytecode .class

* 1. **File Organization**

+ A file consists of sections that should be separated by blank lines and an optional comment identifying each section.

+ Files longer than 2000 lines are cumbersome and should be avoided.

* 1. **Package and Import Statements**

+ The first non-comment line of most Java source files is a package statement. After that, import statements can follow:

*package name;*

*import javafx.application.Application;*

*import javafx.geometry.Insets;*

* 1. **Wrapping Lines**

When an expression will not fit on a single line, break it according to these general principles:

• Break after a comma.

• Break before an operator.

….

* 1. **Comment**

Java programs can have two kinds of comments: implementation comments and documentation comments.

+ Implementation comments (End-Of-Line Comments):

*Ex: // Interger a = 5;*

+ Documentation Comments:

*Ex: /\*\**

*\* The Example class provides ...*

*\*/*

*class Example { ... }*

**2.6 if, if-else, if-else-if-else Statements**

The if-else class of statements should have the following form:

*if (condition){*

*statements;*

*}*

*if (condition) {*

*statements;*

*}else {*

*statements;*

*}*

*if (condition) {*

*statements;*

*} else if (condition) {*

*statements;*

*} else if (condition){*

*statements;*

*}*

**Note:** if statements always use braces {}. Avoid the following error-prone form: if (condition) //AVOID! THIS OMITS THE BRACES {}! statement;

**2.7 Loop**

**\* for Statements**

A for statement should have the following form:

*for (initialization; condition; update) {*

*statements;*

*}*

**\* while Statements**

A while statement should have the following form:

*while (condition) {*

*statements;*

*}*

**\* do-while Statements**

A do-while statement should have the following form:

*do {*

*statements;*

*} while (condition);*

**2.8 try-catch Statements**

A try-catch statement should have the following format:

*try {*

*statements;*

*}catch (ExceptionClass e) {*

*statements;*

*}*

1. **Standards for Declaring Variables**

* Always use the same naming convention for all your code. For example: + All names start with a **letter**.

+ Variable names must be meaningful and of reasonable length.

+ Variable name written as **camelCase.**

+Lower camel case where the first character of the first word is in lowercase. This convention is usually followed while naming the methods and variables. Example, firstName, lastName, actionEvent, printArray( ), etc.

+ Constants (like PI) written in **UPPERCASE**

1. **Standards for Functions Declarations**

* Method name written as **camelCase.**
* Methods should be verbs, in mixed case with the first letter lowercase, with the first letter of each internal word capitalized.

*Ex: run();*

*runFast();*

*getBackground();*

1. **Other Standards**
   1. **Class**

Class names should be nouns, in mixed case with the first letter of each internal word capitalized.

*Ex: class Raster;*

*class ImageSprite;*

**5.2 Interfaces**

Interface names should be capitalized like class names.

**5.3 Security standards**

Authenticate users with username and password when logging into the system.

Assign user permissions to limit access. Make sure they only access the data for which they are authorized.