Code Layout, Code Style and Documentation

Christopher Jarsembinski

Seminar: Effiziente Programmierung

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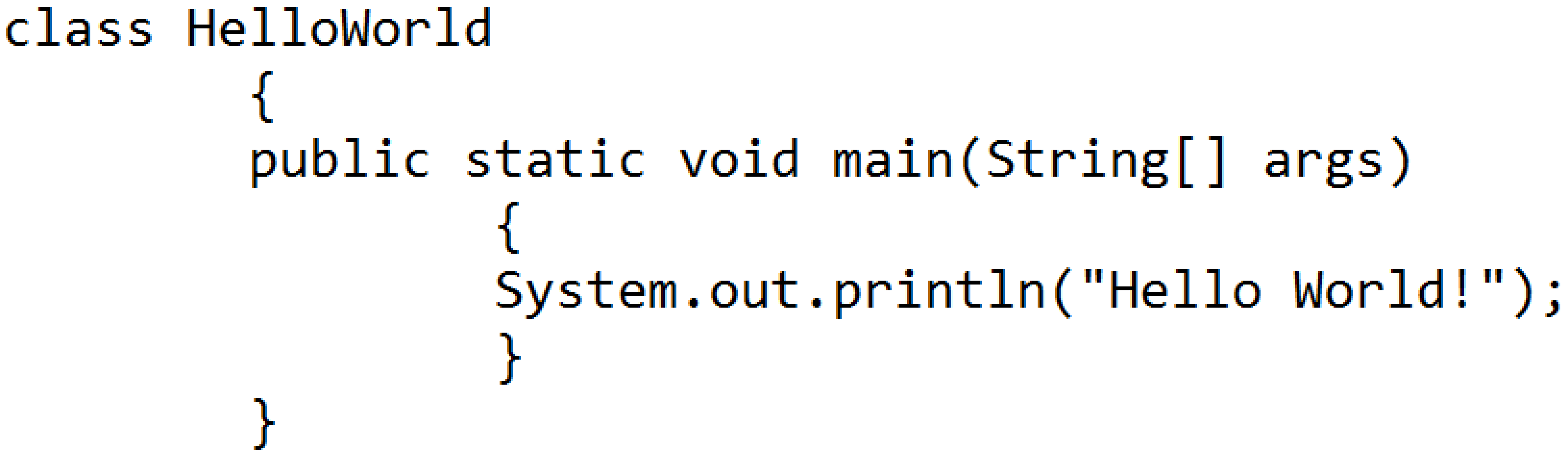
Structure

- Code Layout?
  - Importance of code layout
- Code Style?
  - Different styles
  - Tools
- Code Documentation?
  - Importance of proper documentation

Code Layout

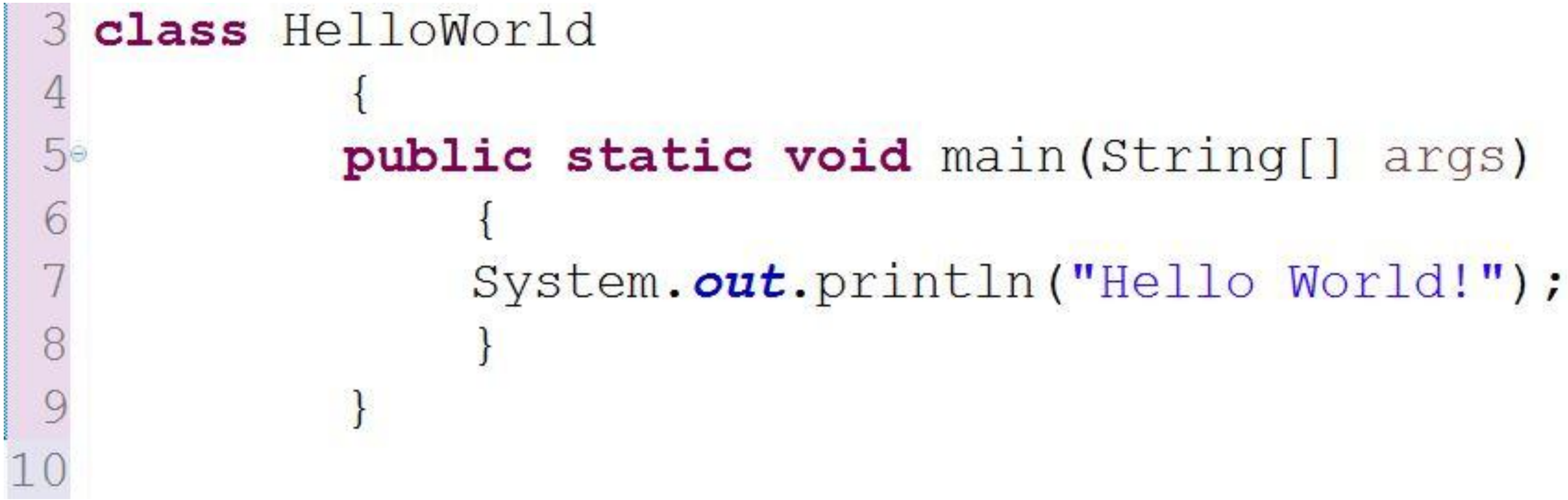
- „Beauty“ aspect of code
- Similar to writing a text
- Supports comprehension
- For humans not machines
- Audience: Others, yourself
- Dependant on Editor/Codeviewer

Texteditor



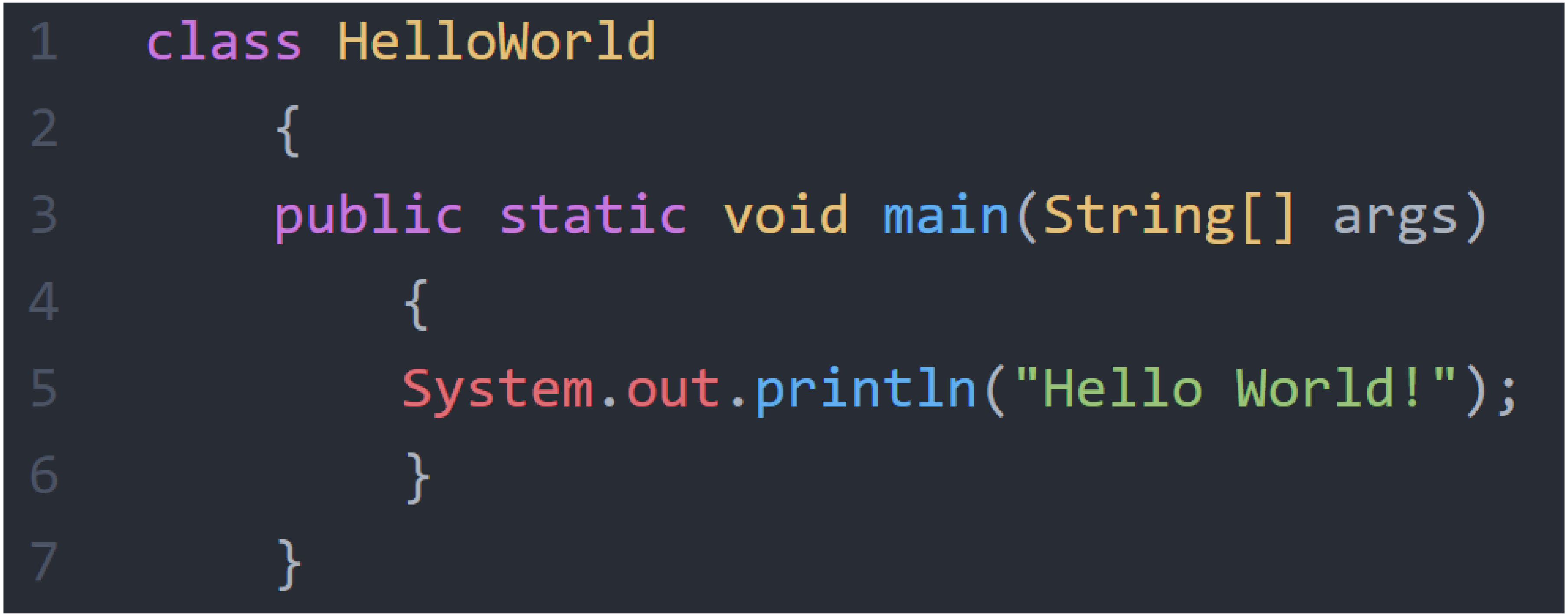
```
class HelloWorld
        {
        public static void main(String[] args)
                {
                System.out.println("Hello World!");
                }
        }
```

Eclipse



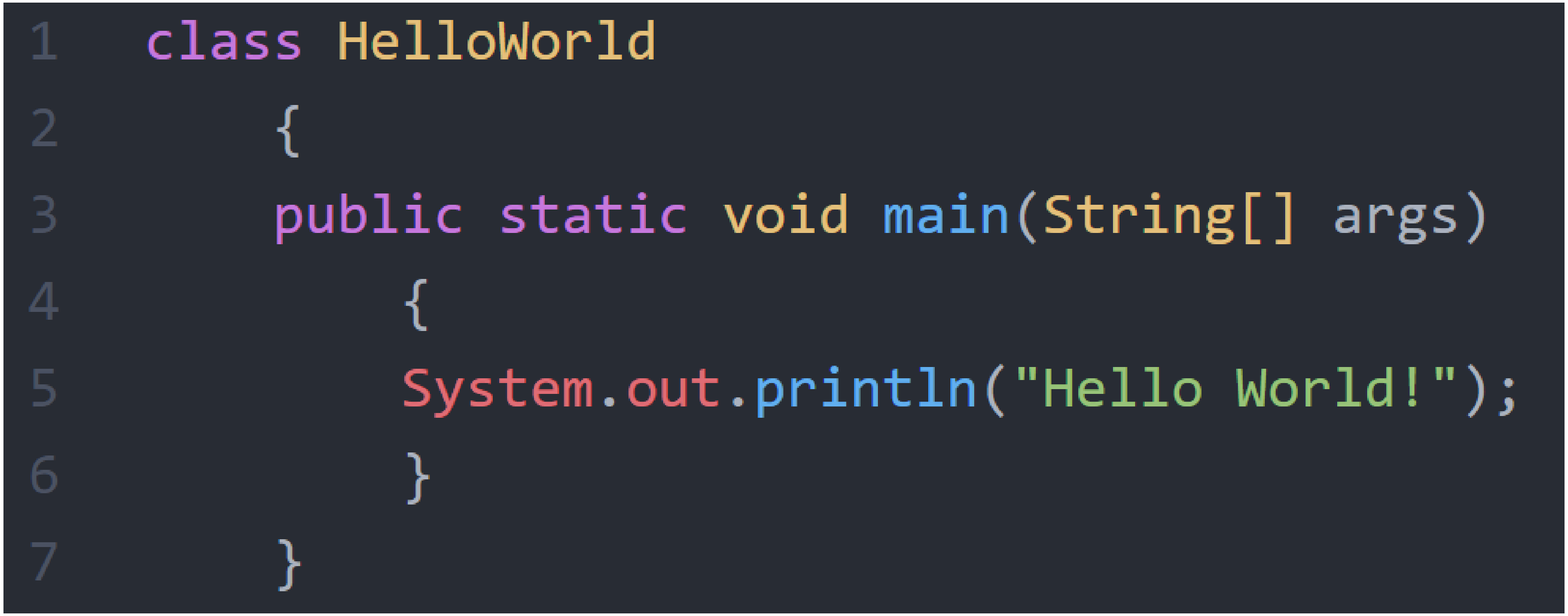
```
class HelloWorld
        {
        public static void main(String[] args)
            {
            System.out.println("Hello World!");
            }
        }
```

Atom



```
class HelloWorld
    {
    public static void main(String[] args)
        {
        System.out.println("Hello World!");
        }
    }
```

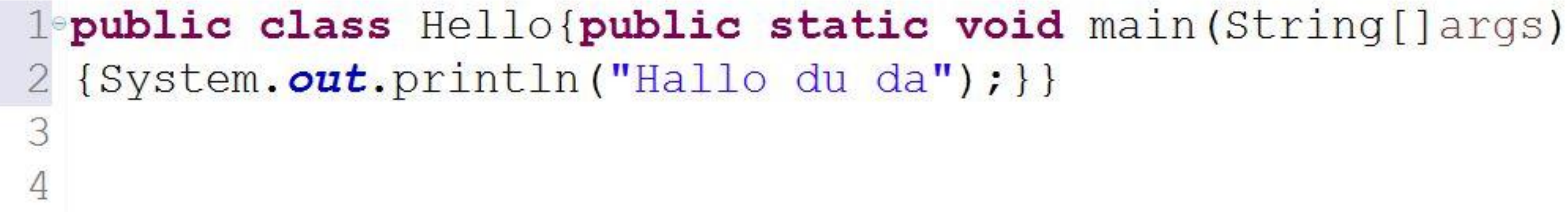
How did we get here?



```
class HelloWorld
    {
    public static void main(String[] args)
        {
        System.out.println("Hello World!");
        }
    }
```

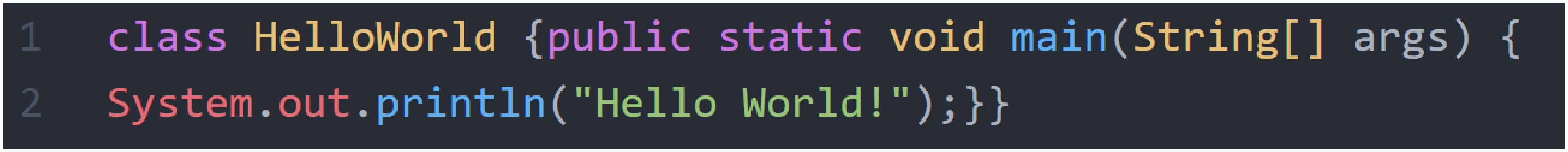
From this:

```
class HelloWorld{public static void main(String[] args) {
System.out.println("Hello World!");}}
```



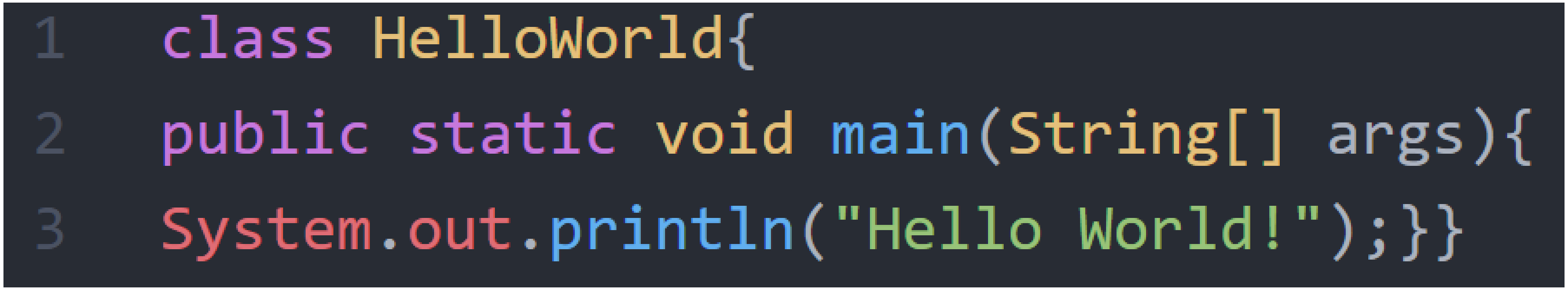
```
public class Hello{public static void main(String[]args)
{System.out.println("Hallo du da");}}


```



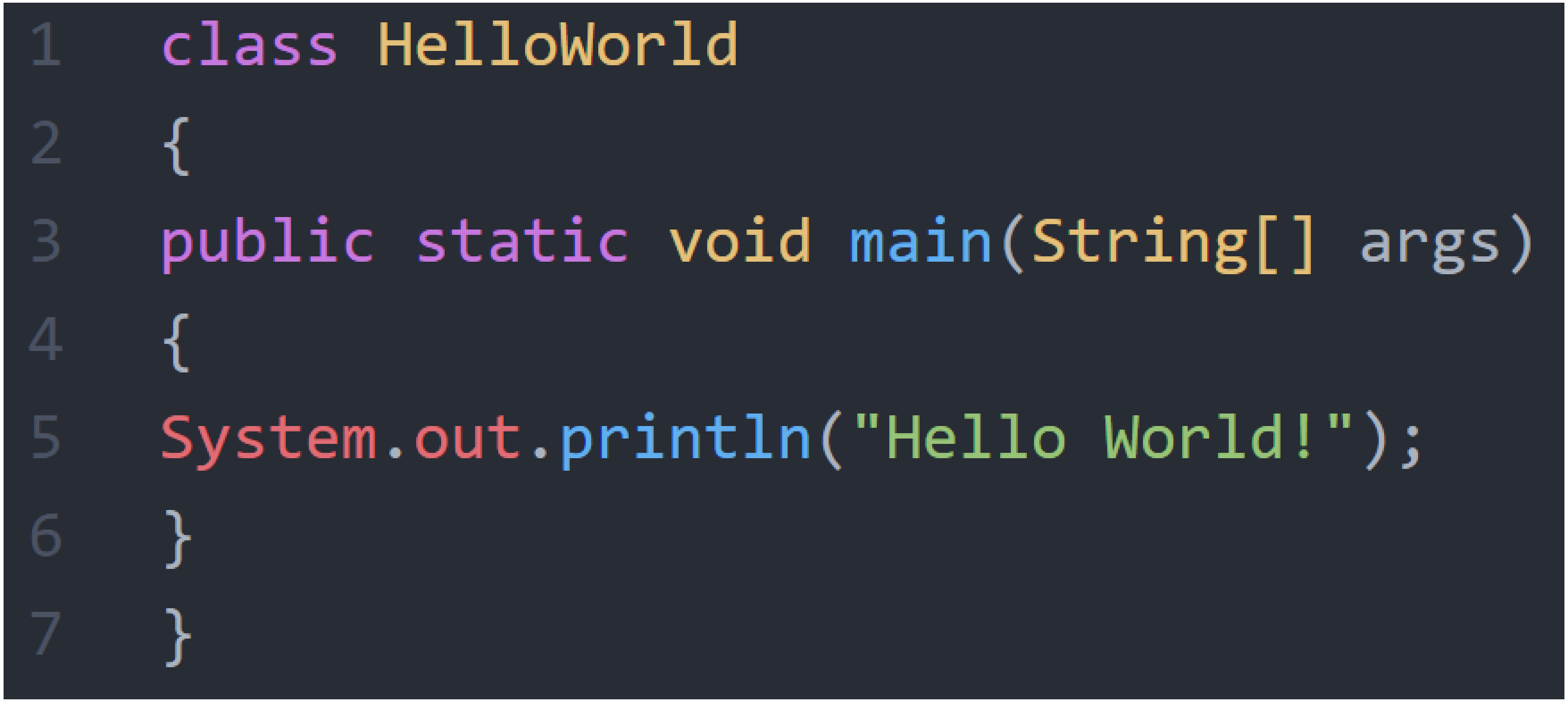
```
class HelloWorld {public static void main(String[] args) {
System.out.println("Hello World!");}}
```

Commands should be lines



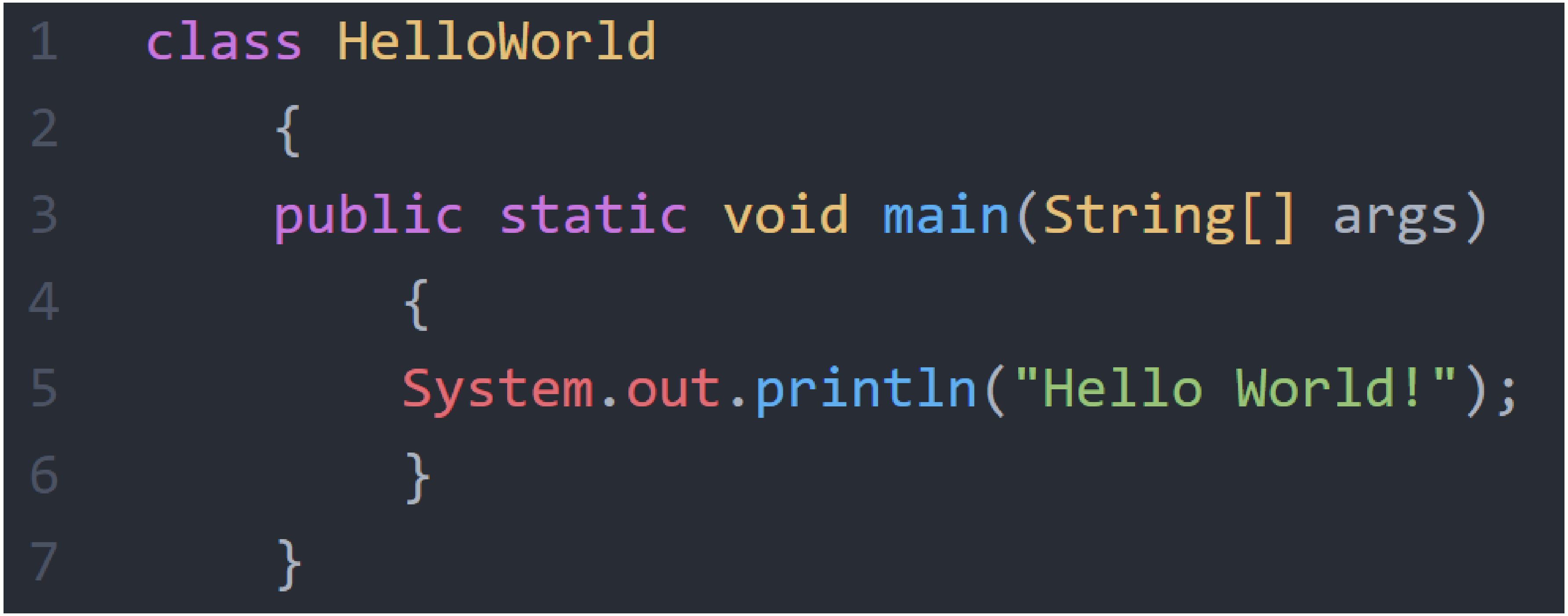
```java
class HelloWorld{
public static void main(String[] args){
System.out.println("Hello World!");}}
```

Brackets should be clearly visible



```
class HelloWorld
{
public static void main(String[] args)
{
System.out.println("Hello World!");
}
}
```

Indenting highlights the structure



```
class HelloWorld
    {
    public static void main(String[] args)
        {
        System.out.println("Hello World!");
        }
    }
```

Important for …

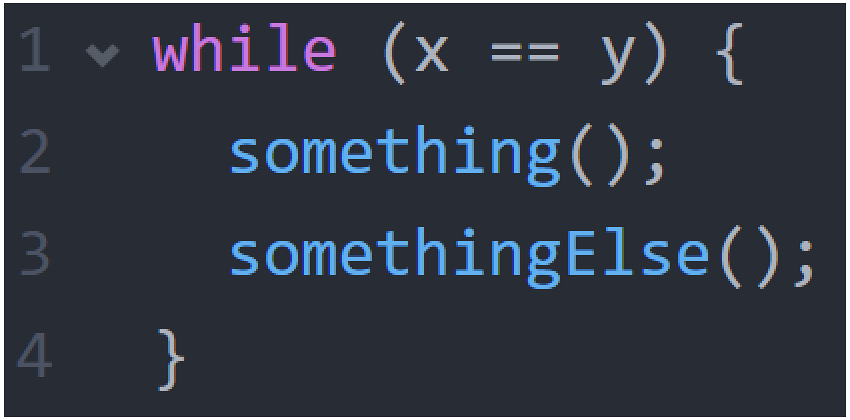
- readability
- comprehension
- understanding
- preventing mistakes
- humans!

Code Style

- Rules or Guidelines
- Represent logical structure visually
- Consistence
- Easier to read and understand code
- Personal / Team / Company choice

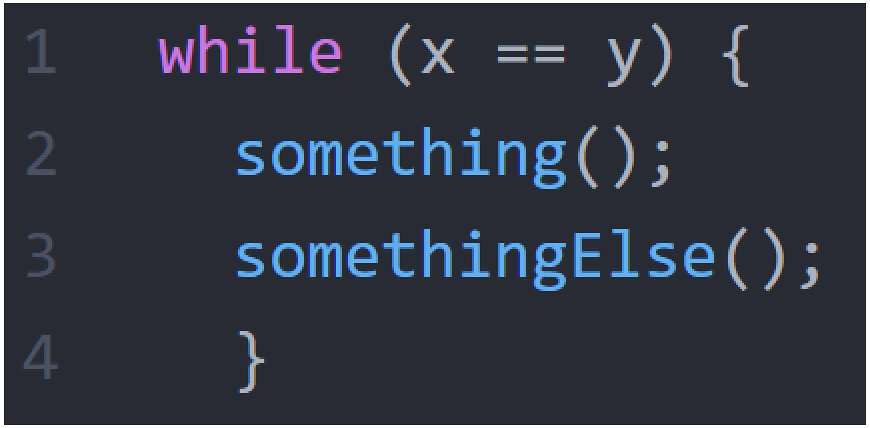
Indentation

K&R



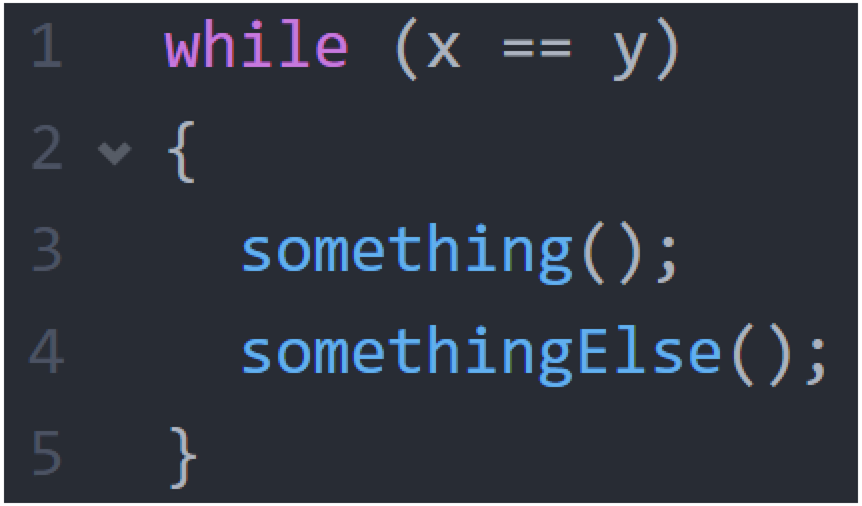
```
while (x == y) {
    something();
    somethingElse();
}
```

Ratliff



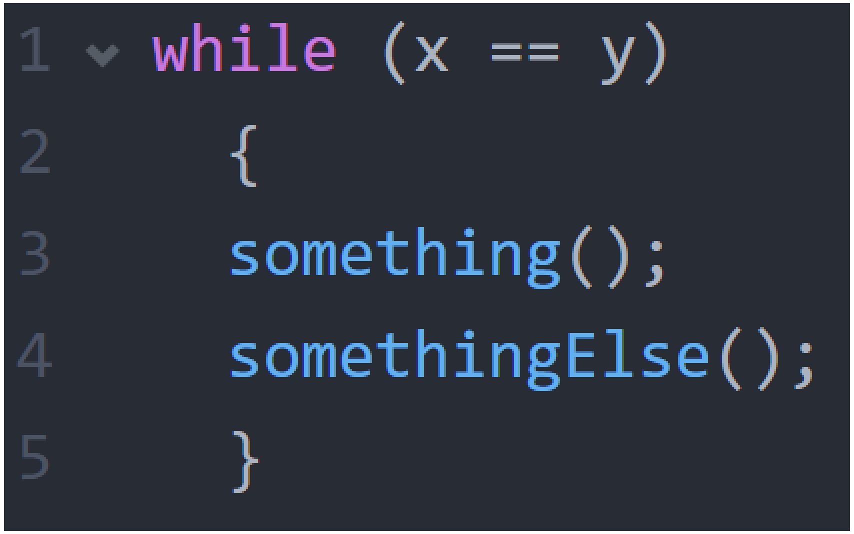
```
while (x == y) {
    something();
    somethingElse();
    }
```

Allman



```
while (x == y)
{
  something();
  somethingElse();
}
```

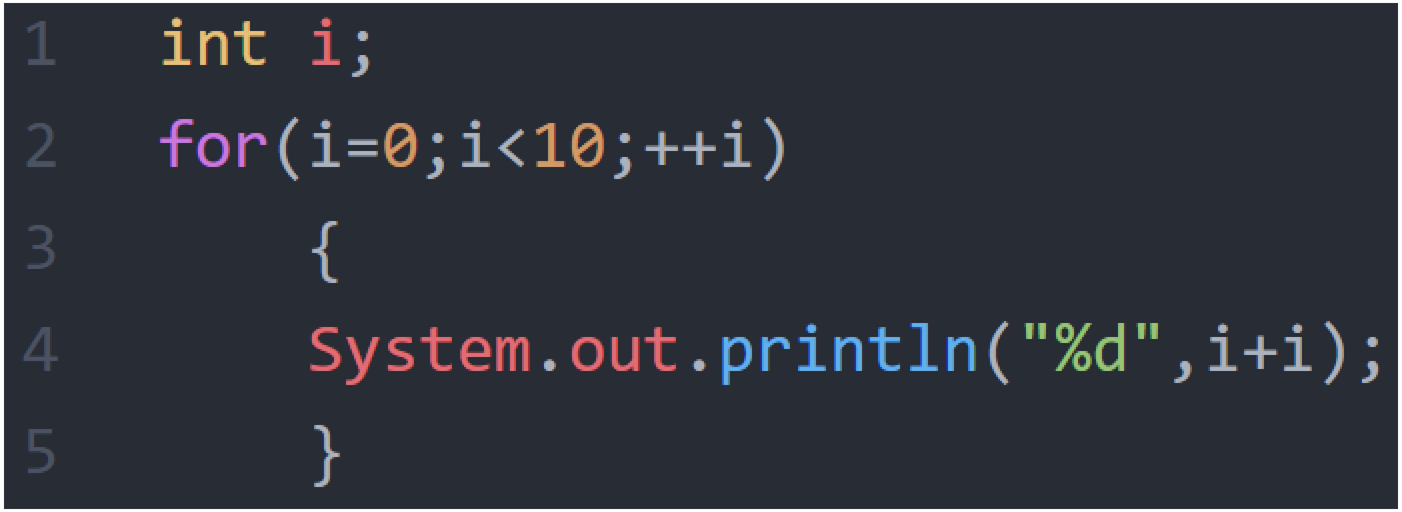
Whitesmiths



```
while (x == y)
  {
  something();
  somethingElse();
  }
```

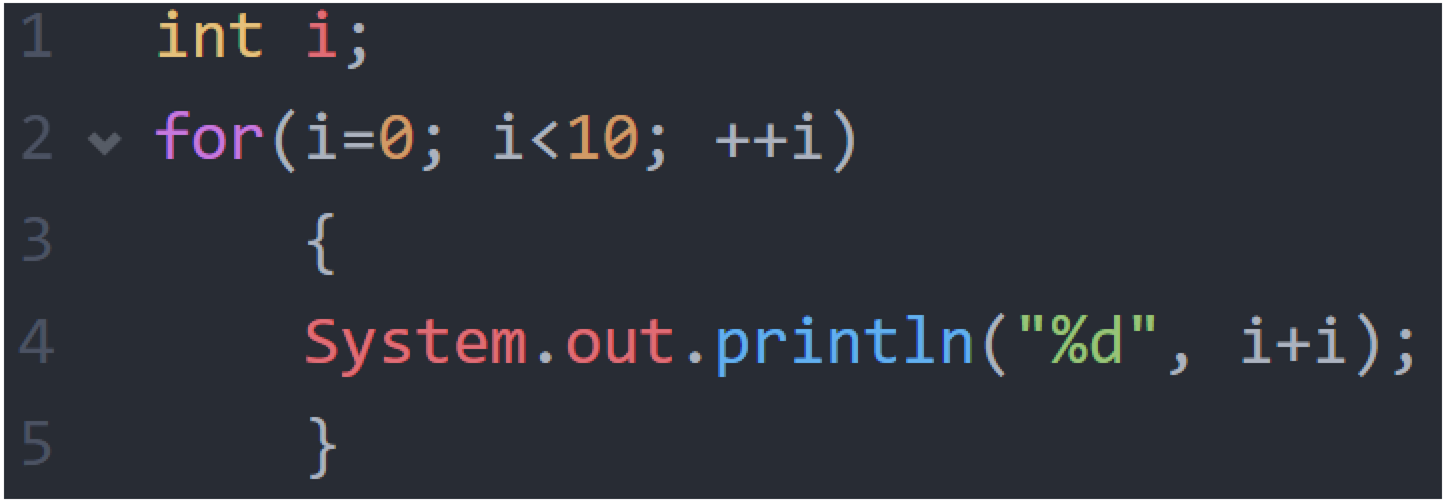
Spaces

No spaces



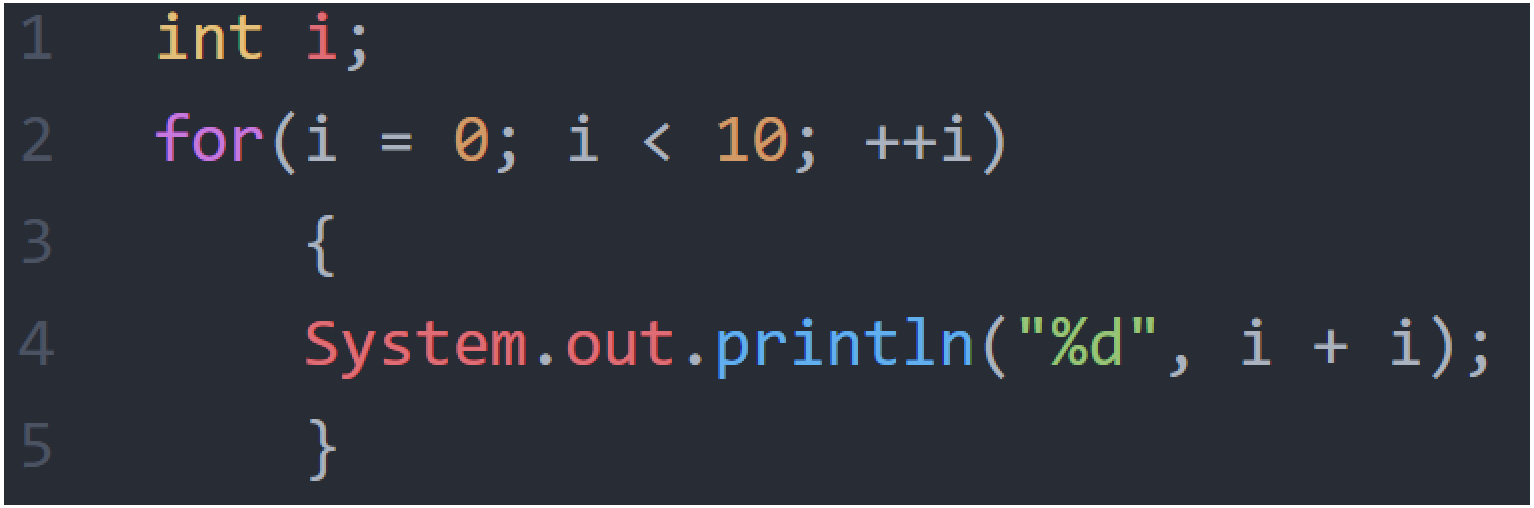
```
int i;
for(i=0;i<10;++i)
    {
    System.out.println("%d",i+i);
    }
```

Spaces between expressions



```
int i;
for(i=0; i<10; ++i)
    {
    System.out.println("%d", i+i);
    }
```

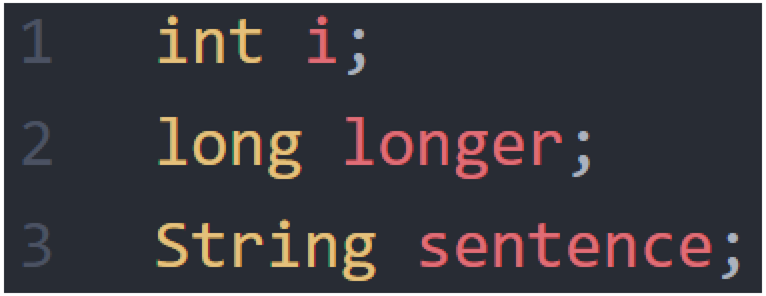
Even more spaces



```
int i;
for(i = 0; i < 10; ++i)
    {
    System.out.println("%d", i + i);
    }
```

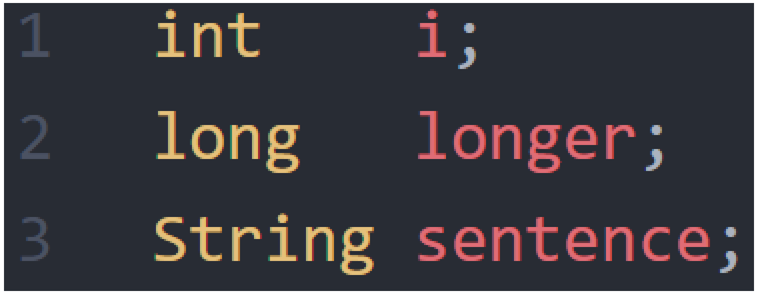
Alignment: Variables

No Alignment:



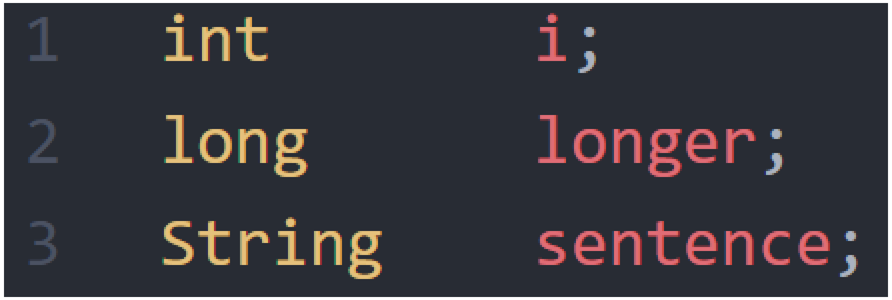
```
int i;
long longer;
String sentence;
```

Alignment:



```
int    i;
long   longer;
String sentence;
```

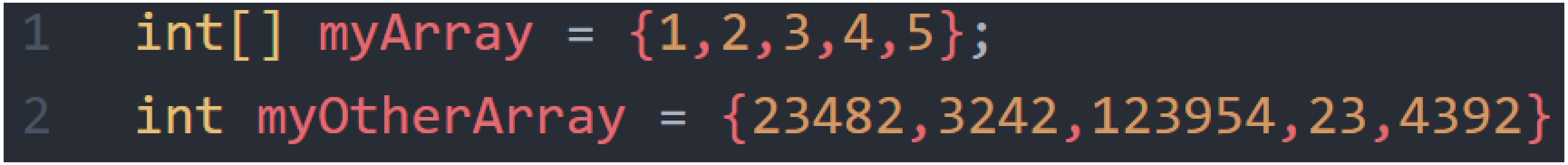
Alignment + Tabs:



```
int       i;
long      longer;
String    sentence;
```

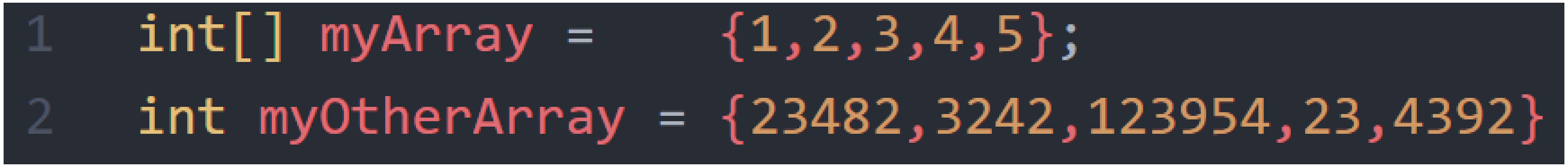
Alignment: Lists

No Alignment:



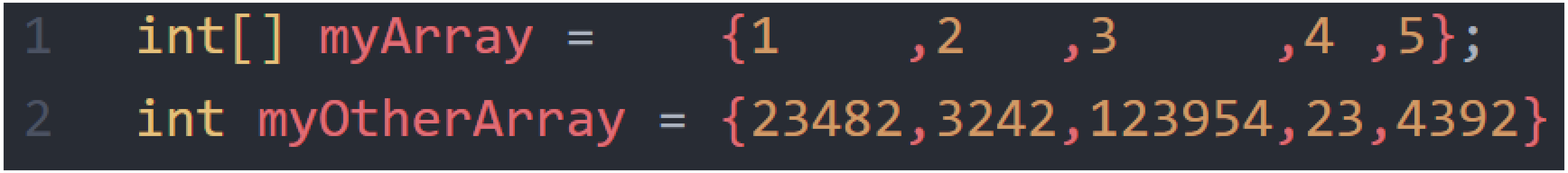
```
int[] myArray = {1,2,3,4,5};
int myOtherArray = {23482,3242,123954,23,4392}
```

Alignment:



```
int[] myArray =    {1,2,3,4,5};
int myOtherArray = {23482,3242,123954,23,4392}
```

Alignment + Tabs:



```
int[] myArray =    {1    ,2   ,3     ,4 ,5};
int myOtherArray = {23482,3242,123954,23,4392}
```

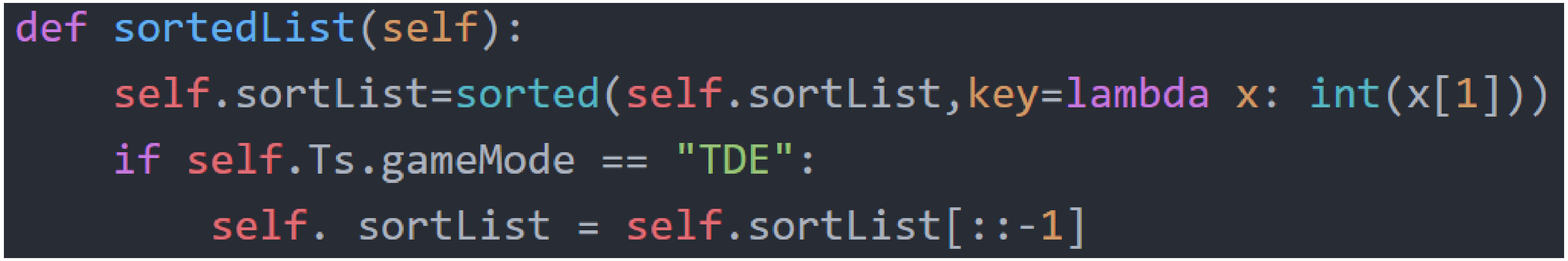
Tools

- Atom
- Eclipse
- Online Formatter
- Artistic Style (C,C++,C#,Java)
- Indent(C)

Code Documentation

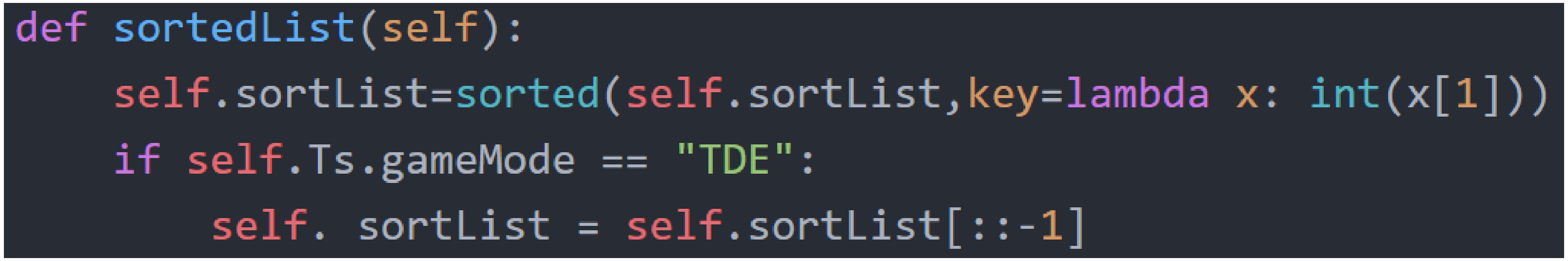
- Comments, the why?
- FAQ
- Readme
- Audience: Users, developers, yourself

Documented vs. Undocumented

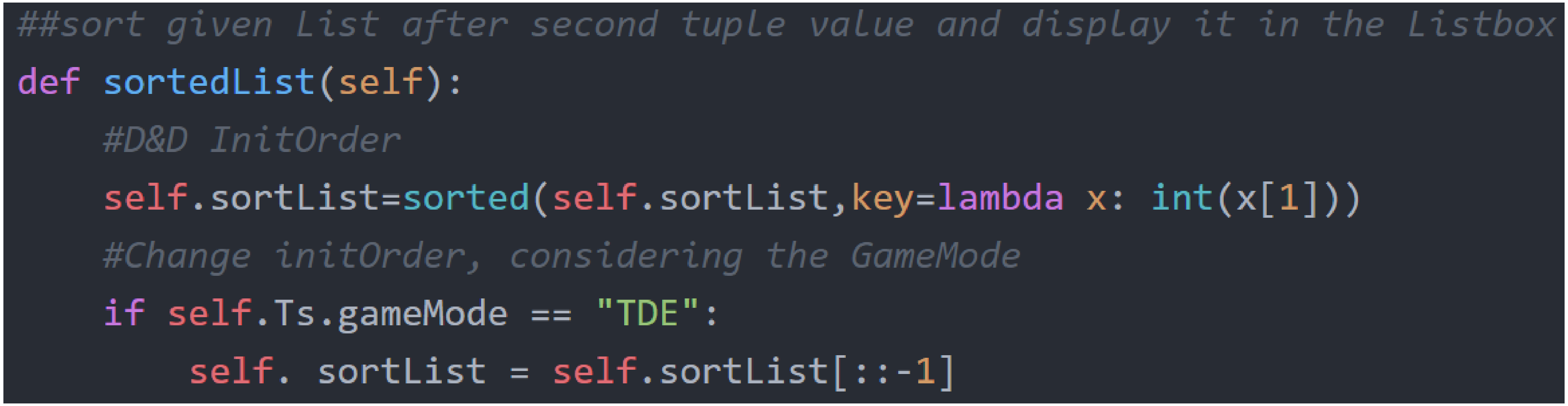


```
def sortedList(self):
    self.sortList=sorted(self.sortList,key=lambda x: int(x[1]))
    if self.Ts.gameMode == "TDE":
        self. sortList = self.sortList[::-1]
```

Documented vs. Undocumented



```python
def sortedList(self):
    self.sortList=sorted(self.sortList,key=lambda x: int(x[1]))
    if self.Ts.gameMode == "TDE":
        self. sortList = self.sortList[::-1]
```



```python
##sort given List after second tuple value and display it in the Listbox
def sortedList(self):
    #D&D InitOrder
    self.sortList=sorted(self.sortList,key=lambda x: int(x[1]))
    #Change initOrder, considering the GameMode
    if self.Ts.gameMode == "TDE":
        self. sortList = self.sortList[::-1]
```

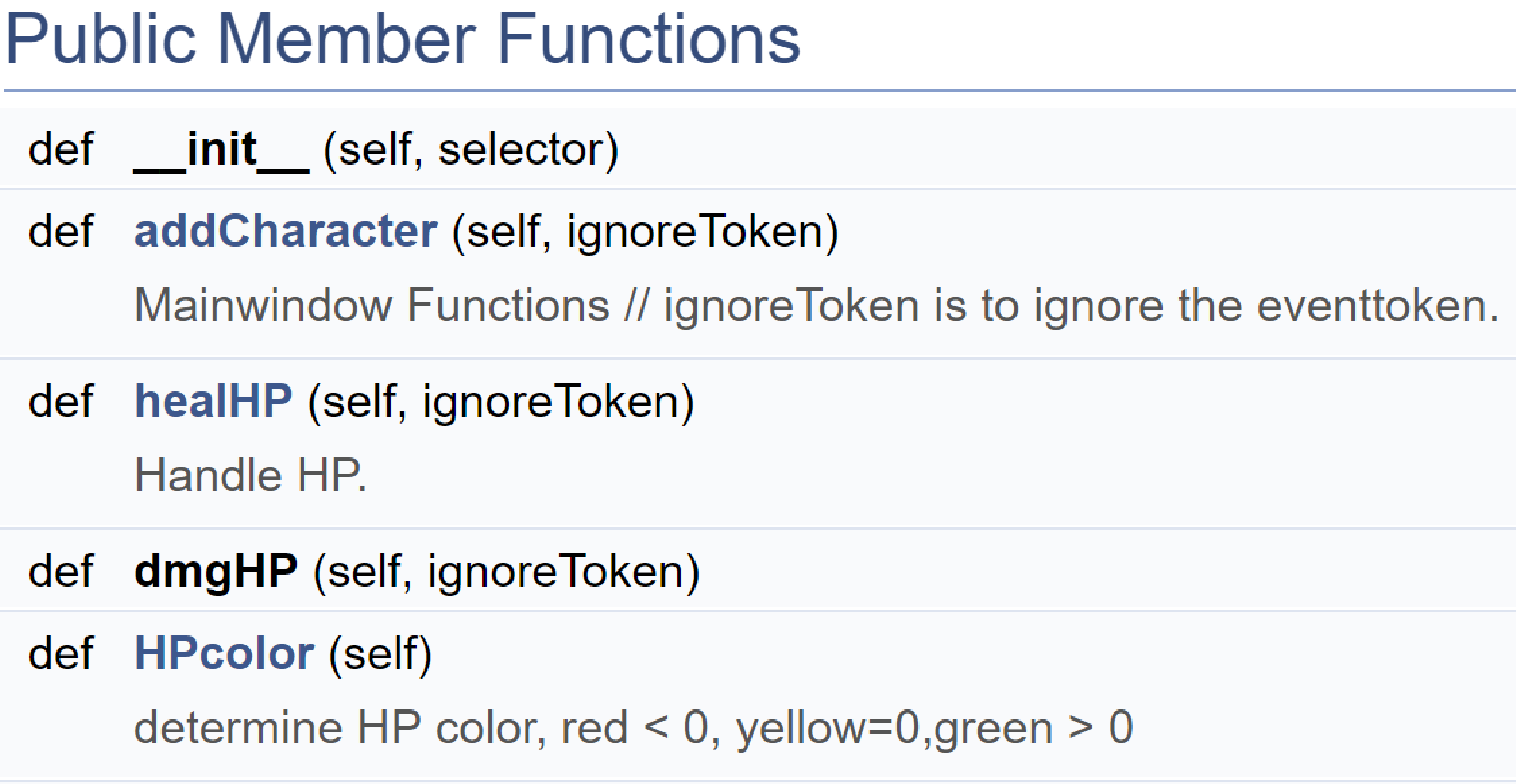
Readme

- Sneak peak of your code/project
- Answers basic questions (e.g. Features)
- Instructions
- Contribution
- License

Tools

- Doxygen
- Natural Docs

Doxygen



Public Member Functions

def	**__init__** (self, selector)
def	**addCharacter** (self, ignoreToken) Mainwindow Functions // ignoreToken is to ignore the eventtoken.
def	**healHP** (self, ignoreToken) Handle HP.
def	**dmgHP** (self, ignoreToken)
def	**HPcolor** (self) determine HP color, red < 0, yellow=0,green > 0

Source

- http://tech.dolhub.com/article/computer/code-Layout
- https://www.stat.auckland.ac.nz/~paul/ItDT/HTML/node20.html
- https://en.wikipedia.org/wiki/Indent_style
- http://www.writethedocs.org/guide/writing/beginners-guide-to-docs/
- http://codebeautify.org/python-formatter-beautifier
- https://www.stack.nl/~dimitri/doxygen/manual/starting.html
- https://atom.io/