

Programming Environment

Outline

- 1 Programming Environment
- 2 Working with the *j--* Compiler

Programming Environment

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Linux, Mac, or Windows operating system configured with the software needed for the course



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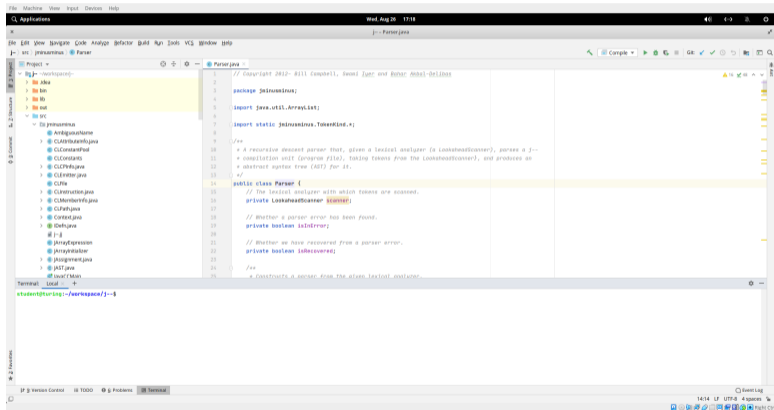


Tools we will use: web browser 🌐, IntelliJ IDE 🗑️, terminal 🖥️, and file manager 📁

Programming Environment

Programming Environment

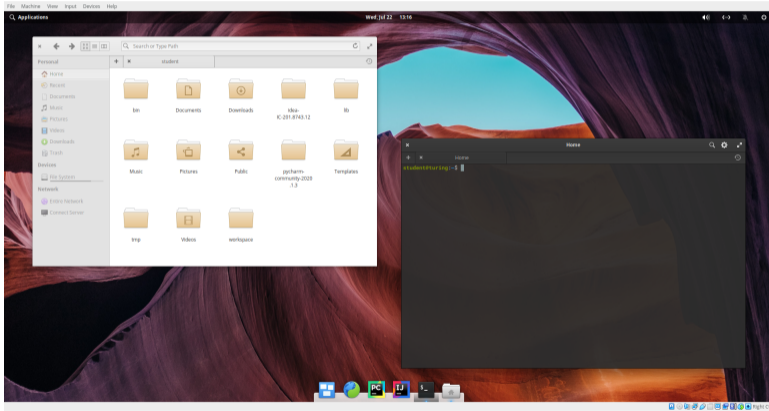
Use IntelliJ IDE  to create/edit/debug/run Java programs



Programming Environment

Programming Environment

Use terminal  and file manager  to navigate the file system



Working with the j-- Compiler

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Download <https://www.cs.umb.edu/j--/j--.zip> under `~/workspace` (- is shorthand for the user's home directory)

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Launch terminal

```
>_ -
```

```
$ -
```

Working with the j-- Compiler

Download <https://www.cs.umb.edu/j--/j--.zip> under `~/workspace` (`-` is shorthand for the user's home directory)

Launch terminal

```
>_ -
```

```
$ -
```

Change directory to `~/workspace`

```
>_ -
```

```
$ cd ~/workspace
```

Working with the j-- Compiler

Download <https://www.cs.umb.edu/j--/j--.zip> under `~/workspace` (`-` is shorthand for the user's home directory)

Launch terminal

```
>_ -
```

```
$ -
```

Change directory to `~/workspace`

```
>_ -
```

```
$ cd ~/workspace
```

Extract the downloaded zip file

```
>_ ~/workspace
```

```
$ unzip j--.zip
```

Working with the j-- Compiler

Working with the j-- Compiler

List current directory

```
>_ ~/workspace
```

```
$ ls  
j-- j--.zip
```


Working with the j-- Compiler

List current directory

```
>_ ~/workspace  
$ ls  
j-- j--.zip
```

Remove the zip file

```
>_ ~/workspace  
$ rm j--.zip
```

Working with the j-- Compiler

List current directory

```
>_ ~/workspace  
$ ls  
j-- j--.zip
```

Remove the zip file

```
>_ ~/workspace  
$ rm j--.zip
```

Exit the terminal

```
>_ ~/workspace  
$ exit
```

Working with the j-- Compiler

List current directory

```
>_ ~/workspace  
$ ls  
j-- j--.zip
```

Remove the zip file

```
>_ ~/workspace  
$ rm j--.zip
```

Exit the terminal

```
>_ ~/workspace  
$ exit
```

We refer to parent directory of `j--`, which is `~/workspace` in our case, as `$j`

Working with the j-- Compiler

Working with the j-- Compiler

Open `$j/j--` in IntelliJ to work on the programs

Working with the j-- Compiler

Open `$j/j--` in IntelliJ to work on the programs

Compile the `j--` compiler on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ ant
```

Working with the j-- Compiler

Open `$j/j--` in IntelliJ to work on the programs

Compile the `j--` compiler on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ ant
```

Compile the `j--` program `$j/j--/tests/jvm/HelloWorld.java` for JVM on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ /bin/bash ./bin/j-- tests/jvm/HelloWorld.java
```

Working with the j-- Compiler

Open `$j/j--` in IntelliJ to work on the programs

Compile the `j--` compiler on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ ant
```

Compile the `j--` program `$j/j--/tests/jvm/HelloWorld.java` for JVM on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ /bin/bash ./bin/j-- tests/jvm/HelloWorld.java
```

Run the JVM program `HelloWorld.class` on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ java HelloWorld
```


Working with the j-- Compiler

Working with the j-- Compiler

Disassemble `HelloWorld.class` on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ javap -p -v HelloWorld
```

Working with the j-- Compiler

Disassemble `HelloWorld.class` on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ javap -p -v HelloWorld
```

Compile the `j--` program `$j/j--/tests/spim/HelloWorld.java` for MIPS on the IntelliJ terminal

```
>_ ~/workspace/j--
```

```
$ /bin/bash ./bin/j-- -s naive tests/spim/HelloWorld.java
```

Working with the j-- Compiler

Disassemble `HelloWorld.class` on the IntelliJ terminal

```
>_ ~/workspace/j--  
$ javap -p -v HelloWorld
```

Compile the `j--` program `$j/j--/tests/spim/HelloWorld.java` for MIPS on the IntelliJ terminal

```
>_ ~/workspace/j--  
$ /bin/bash ./bin/j-- -s naive tests/spim/HelloWorld.java
```

Run the MIPS program `HelloWorld.s` on the IntelliJ terminal

```
>_ ~/workspace/j--  
$ spim -f HelloWorld.s
```

Working with the j-- Compiler

Disassemble `HelloWorld.class` on the IntelliJ terminal

```
>_ ~/workspace/j--  
$ javap -p -v HelloWorld
```

Compile the `j--` program `$j/j--/tests/spim/HelloWorld.java` for MIPS on the IntelliJ terminal

```
>_ ~/workspace/j--  
$ /bin/bash ./bin/j-- -s naive tests/spim/HelloWorld.java
```

Run the MIPS program `HelloWorld.s` on the IntelliJ terminal

```
>_ ~/workspace/j--  
$ spim -f HelloWorld.s
```

Use the web browser  to sign on to Gradescope and upload files