

The directory for the module files looks like the following on command prompt:

```
Directory of C:\Users\hole1\Google Drive\LearnJava\JavaAdv\Final-Adv-Java-Assignment-Annie-Yen

11/20/2018  03:13 AM    <DIR>          .
11/20/2018  03:13 AM    <DIR>          ..
11/20/2018  02:38 AM    <DIR>          com.adv.java.application
11/20/2018  02:45 AM    <DIR>          com.adv.java.concurrency
11/20/2018  02:40 AM    <DIR>          com.adv.java.iostream
11/20/2018  02:43 AM    <DIR>          com.adv.java.regex
11/20/2018  02:44 AM    <DIR>          com.adv.java.xml
11/17/2018  10:22 PM             310 JobResult.dat
11/20/2018  03:13 AM             310 JobResult.xml
                2 File(s)              620 bytes
                7 Dir(s)  826,401,542,144 bytes free
```

Module com.adv.java.iostream

To run the compilation of this module, input the following on the command prompt

```
javac com.adv.java.iostream/module-info.java
com.adv.java.iostream/com/adv/java/iostream/FileIOStream.java
com.adv.java.iostream/com/adv/java/iostream/internal/FileIOStreamImpl.java
C:\Users\hole1\Google Drive\LearnJava\JavaAdv\Final-Adv-Java-Assignment-Annie-Yen>javac com.adv.java.iostream/module-info.java com.adv.java.iostream/com/adv/java/iostream/FileIOStream.java com.adv.java.iostream/com/adv/java/iostream/internal/FileIOStreamImpl.java
```

Module com.adv.java.regex

To run the compilation of this module, input the following on the command prompt

```
javac -p com.adv.java.iostream com.adv.java.regex/module-info.java
com.adv.java.regex/com/adv/java/regex/RegexFilter.java
com.adv.java.regex/com/adv/java/regex/internal/RegexFilterImpl.java
C:\Users\hole1\Google Drive\LearnJava\JavaAdv\Final-Adv-Java-Assignment-Annie-Yen>javac -p com.adv.java.iostream com.adv.java.regex/module-info.java com.adv.java.regex/com/adv/java/regex/RegexFilter.java com.adv.java.regex/com/adv/java/regex/internal/RegexFilterImpl.java
```

Module com.adv.java.xml

To run the compilation of this module, input the following on the command prompt

```
javac -p com.adv.java.iostream com.adv.java.xml/module-info.java
com.adv.java.xml/com/adv/java/xml/SAXParser.java
com.adv.java.xml/com/adv/java/xml/internal/SAXParserImpl.java
C:\Users\hole1\Google Drive\LearnJava\JavaAdv\Final-Adv-Java-Assignment-Annie-Yen>javac -p com.adv.java.iostream com.adv.java.xml/module-info.java com.adv.java.xml/com/adv/java/xml/SAXParser.java com.adv.java.xml/com/adv/java/xml/internal/SAXParserImpl.java
```

Module com.adv.java.concurrency

To run the compilation of this module, input the following on the command prompt

```
javac com.adv.java.concurrency/module-info.java
com.adv.java.concurrency/com/adv/java/concurrency/ConcurrentThreadCount.java
com.adv.java.concurrency/com/adv/java/concurrency/internal/AtomicLongCounter.java
com.adv.java.concurrency/com/adv/java/concurrency/internal/ReentrantLockCounter.java
com.adv.java.concurrency/com/adv/java/concurrency/internal/WithoutLock.java
C:\Users\hole1\Google Drive\LearnJava\JavaAdv\Final-Adv-Java-Assignment-Annie-Yen>javac com.adv.java.concurrency/module-info.java com.adv.java.concurrency/com/adv/java/concurrency/ConcurrentThreadCount.java com.adv.java.concurrency/com/adv/java/concurrency/internal/AtomicLongCounter.java com.adv.java.concurrency/com/adv/java/concurrency/internal/ReentrantLockCounter.java com.adv.java.concurrency/com/adv/java/concurrency/internal/WithoutLock.java
```

Module com.adv.java.application

To run the compilation of this module, input the following on the command prompt

```
javac -p com.adv.java.iostream;com.adv.java.regex;com.adv.java.xml;com.adv.java.concurrency
com.adv.java.application/module-info.java
com.adv.java.application/com/adv/java/application/Main.java
```

```
C:\Users\hole1\Google Drive\LearnJava\JavaAdv\Final-Adv-Java-Assignment-Annie-Yen>javac -p com.adv.java.iostream;com.adv.java.regex;com.adv.java.xml;com.adv.java.concurrency com.adv.java.application/module-info.java com.adv.java.application/com/adv/java/application/Main.java
```

To run the program of this module with all the modules on the module path

```
java -p
com.adv.iostream;com.adv.java.regex;com.adv.java.xml;com.adv.java.concurrency;com.adv.java.application -m com.adv.java.application/com.adv.java.application.Main
```

```
C:\Users\hole1\Google Drive\LearnJava\JavaAdv\Final-Adv-Java-Assignment-Annie-Yen>java -p com.adv.java.iostream;com.adv.java.regex;com.adv.java.xml;com.adv.java.concurrency;com.adv.java.application -m com.adv.java.application/com.adv.java.application.Main
```

The output of com.adv.java.application will look like the following:

```
First: use module com.adv.java.iostream to input the file JobResult.dat and convert it to xml file.
The contents of JobResult.dat file are the following:
```

```
<jobresult>
<serial>0000012345
</serial>
<data>
<visible-string length="16">000000007b020000
</visible-string>
</data>
<data>
<structure count="2">
<unsigned>255
</unsigned>
<double-long-unsigned>0
</double-long-unsigned>
</structure>
</data>
<data>
<double-long-unsigned>1538752262
</double-long-unsigned>
</data>
</jobresult>
```

```
Second: use module com.adv.java.regex to find out how many distinctive tags are there in the xml file.
There are 7 distinctive tags
```

```
<jobresult>
<serial>
<data>
<visible-string length="16">
<structure count="2">
<unsigned>
<double-long-unsigned>
```

```
Third: use module com.adv.java.xml to do XML parsing using SAX Parser to find the following:
```

Results of XML Parsing using SAX Parser:

```
serial: 0000012345
visible-string: 000000007b020000
unsigned: 255
```

***The result of SAX Parser is stored as String resultString

```
Fourth: use module com.adv.java.concurrency to count the number of characters it has in resultString over 1,000 threads,
using three different synchronizations:
```

```
WithoutLock Count: 92478
ReentrantLock Count: 94000
AtomicLong Count: 94000
```