

Assignment 3: GIT Version Control and Apache ANT

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1 Download the Repository

This assignment aimed to teach the fundamentals of GIT, a version control system, and to use ANT to write a build file for a java based application project.

Unfortunately as one of the students who was unable to gain access to the TAU server. I was forced to download the alternative file from the course home page. I will however still go through the steps to clone a pre-existing repository.

The command is as follows:

```
$ git clone [insert URL address here]
```

The GIT VCS also contains a number of features which we will explore further on in this document. After cloning, the directory named **Project** was created. Our goal after cloning this repository was to rewrite the **build.xml**

2 rewriting build.xml

The build.xml needed to contain at least 4 targets.

- **INIT**- To create all the needed directories for the project. this was done using the **mkdir** tag. Creating a directory named **build** with two subdirectories of: **classes** and **lib**
- **COMPILE**- To compile all the java code in the source directory to the created **classes** subdirectory.
- **JAR**- To create a Java ARchive(JAR) with a Main-Class and store this in the **lib** subdirectory.
- **RUN**- To execute the created JAR file within the **lib** directory.
- **CLEAN**- To remove all files and directories created by the program.

3 The Re-Written build.xml

Below is a copy of the rewritten build.xml

```
<project name="compareShapes" default="clean" basedir=". ">
<description>
Application to compare the area of a number of different shapes
</description>

<!-- set global properties for this build -->
<property name="src" location="."/>
<property name="build" location="build"/>

<target name="initialise">
<!-- Create the required directories: /build, /build/lib, /build/classes -->
<mkdir dir="${build}/lib"/>
<mkdir dir="${build}/classes"/>
</target>

<target name="compile" depends="initialise"
description="compile the source">
<!-- Compile class files from ${src} to ${build}/lib -->
<javac srcdir="${src}" destdir="${build}/classes"/>
</target>

<target name="jar" depends="compile"
description="create executable jar">
<!-- create a JAR with the Main-Class and store file in /lib subdirectory -->
<jar jarfile="${build}/lib/mainProgram.jar" basedir="${build}/classes">
<manifest>
<attribute name="Main-Class" value="TestShape"/>
</manifest>
</jar>
</target>

<target name="run" depends="jar"
description="runs main program">
<!-- will run mainProgram.jar -->
```

```

<java jar="${build}/lib/mainProgram.jar" fork="true"/>
</target>

<target name="clean" depends="run"
description="clean up">
<!-- Delete ${build} and it's subdirectories-->
<delete dir="${build}"/>
</target>

</project>

```

When the build.xml was run from the command line with:

```
$ ant -v
```

The following was output:

```

Apache Ant(TM) version 1.10.3 compiled on July 19 2018
Trying the default build file: build.xml
Buildfile: /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/Project
/build.xml
Detected Java version: 10 in: /usr/lib/jvm/java-11-openjdk-amd64
Detected OS: Linux
parsing buildfile /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project/build.xml with URI = file:/home/niall/Desktop/Niall/UNI/
SoftwareDevelopment/Project/build.xml
Project base dir set to: /home/niall/Desktop/Niall/UNI/
SoftwareDevelopment/Project
parsing buildfile jar:file:/usr/share/ant/lib/ant.jar!/org/apache/
tools/ant/antlib.xml with URI = jar:file:/usr/share/ant/lib/ant.
jar!/org/apache/tools/ant/antlib.xml from a zip file
Build sequence for target(s) 'clean' is [initialise, compile, jar,
run, clean]
Complete build sequence is [initialise, compile, jar, run, clean, ]

initialise:
[mkdir] Created dir: /home/niall/Desktop/Niall/UNI/
SoftwareDevelopment/Project/build/lib
[mkdir] Created dir: /home/niall/Desktop/Niall/UNI/
SoftwareDevelopment/Project/build/classes

compile:
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project/build.xml:21: warning: 'includeantruntime' was not
set, defaulting to build.sysclasspath=last; set to false for
repeatable builds

```

```

[javac] Circle.java added as Circle.class doesn't exist.
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/README.md skipped - don't know how to handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/README_FIRST skipped - don't know how to handle it
[javac] Rectangle.java added as Rectangle.class doesn't exist.
[javac] Shape.java added as Shape.class doesn't exist.
[javac] Square.java added as Square.class doesn't exist.
[javac] TestShape.java added as TestShape.class doesn't exist.
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/build.xml skipped - don't know how to handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/commit log skipped - don't know how to handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/discussion/.Output.swp skipped - don't know how to
        handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/discussion/Ass3Te skipped - don't know how to handle
        it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/discussion/Ass3Te.pdf skipped - don't know how to
        handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/discussion/Assignment3Discussion skipped - don't know
        how to handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/discussion/Assignment3Discussion.aux skipped - don't
        know how to handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/discussion/Assignment3Discussion.log skipped - don't
        know how to handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/discussion/Assignment3Discussion.pdf skipped - don't
        know how to handle it
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/discussion/Output skipped - don't know how to handle
        it
[javac] Compiling 5 source files to /home/niall/Desktop/Niall/
        UNI/SoftwareDevelopment/Project/build/classes
[javac] Using modern compiler
[javac] Compilation arguments:
[javac] '-d'
[javac] '/home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
        Project/build/classes'
[javac] '-classpath'

```

```

[javac] '/home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project/build/classes:/usr/share/ant/lib/ant-launcher.jar:/
usr/share/ant/lib/ant-commons-logging.jar:/usr/share/ant/lib/
ant-apache-bcel.jar:/usr/share/ant/lib/ant-apache-regexp.jar
:/usr/share/ant/lib/ant-apache-xalan2.jar:/usr/share/ant/lib/
ant-apache-bsf.jar:/usr/share/ant/lib/ant-antlr.jar:/usr/
share/ant/lib/ant.jar:/usr/share/ant/lib/ant-javamail.jar:/
usr/share/ant/lib/ant-junit4.jar:/usr/share/ant/lib/ant-junit
.jar:/usr/share/ant/lib/ant-apache-oro.jar:/usr/share/ant/lib
/ant-xz.jar:/usr/share/ant/lib/ant-swing.jar:/usr/share/ant/
lib/ant-apache-resolver.jar:/usr/share/ant/lib/ant-testutil.
jar:/usr/share/ant/lib/ant-jmf.jar:/usr/share/ant/lib/ant-
jdepend.jar:/usr/share/ant/lib/ant-jsch.jar:/usr/share/ant/
lib/ant-commons-net.jar:/usr/share/ant/lib/ant-apache-log4j.
jar'
[javac] '-sourcepath'
[javac] '/home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project'
[javac] '-g:none'
[javac]
[javac] The ' characters around the executable and arguments are
[javac] not part of the command.
[javac] Files to be compiled:
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project/Circle.java
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project/Rectangle.java
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project/Shape.java
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project/Square.java
[javac] /home/niall/Desktop/Niall/UNI/SoftwareDevelopment/
Project/TestShape.java

jar:
[jar] Building jar: /home/niall/Desktop/Niall/UNI/
SoftwareDevelopment/Project/build/lib/mainProgram.jar
[jar] adding directory META-INF/
[jar] adding entry META-INF/MANIFEST.MF
[jar] adding entry Circle.class
[jar] adding entry Rectangle.class
[jar] adding entry Shape.class
[jar] adding entry Square.class
[jar] adding entry TestShape.class
[jar] No Implementation-Title set.No Implementation-Version set

```

```
.No Implementation-Vendor set.  
[jar] Location: /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build.xml:27:
```

run:

```
[java] Executing '/usr/lib/jvm/java-11-openjdk-amd64/bin/java'  
with arguments:  
[java] '-jar'  
[java] '/home/niall/Desktop/Niall/UNI/SoftwareDevelopment/  
Project/build/lib/mainProgram.jar'  
[java]  
[java] The ' characters around the executable and arguments are  
[java] not part of the command.  
[java] Enter number of shapes:  
1  
[java] Enter shape type:  
c  
[java] Enter radius:  
12  
[java] Sorted by area:  
[java] circle of area 452.389342032
```

clean:

```
[delete] Deleting directory /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build  
[delete] Deleting /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build/classes/Square.class  
[delete] Deleting /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build/classes/Rectangle.class  
[delete] Deleting /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build/classes/TestShape.class  
[delete] Deleting /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build/classes/Shape.class  
[delete] Deleting /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build/classes/Circle.class  
[delete] Deleting directory /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build/classes  
[delete] Deleting /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build/lib/mainProgram.jar  
[delete] Deleting directory /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build/lib  
[delete] Deleting directory /home/niall/Desktop/Niall/UNI/  
SoftwareDevelopment/Project/build
```

BUILD SUCCESSFUL

Total time: 12 seconds

4 Inserting The New build.xml Into The Repository

In order to check the new build.xml into the Git repository the following command needed to be used:

```
$ git add build.xml
```

This command will insert build.xml into the local git repository's staging area. To see what files are currently within the staging area use:

```
$ git status
```

This will give the following output:

On branch master

Your branch is up to date with 'origin/master'.

Changes to be committed:

(use "git reset HEAD <file>..." to unstage)

modified: build.xml

Untracked files:

(use "git add <file>..." to include in what will be committed)

Output

Once the status of the staging area is assessed, we must commit the changes within the staging area to the local repository:

```
$ git commit
```

This command will return a document within the terminal (using VI) which list the changes to be committed to the local repository. The document will ask the user to delete all comment characters which are excluding the wanted changes. Once saved this document will pass the files to the local repository. Below is a copy of this document:

```
# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
# On branch master
# Your branch is up to date with 'origin/master'.
#
Changes to be committed:
```



```

        modified: build.xml
#
# Changes not staged for commit:
#   deleted:   Output
#   modified:  discussion/Output
#

```

If the repository has a remote origin, the changes to the local repository can also be transmitted to the origin's location.

```
$ git push -u origin master
```

As I have an alternative version of this GIT repository on my GitHub page, the output is from me pushing a duplicate repository to that page.

```

niall@Colossus:~/Desktop/Niall/UNI/SoftwareDevelopment/Project$ git
push -u origin master
Username for 'https://github.com': llainSregdor
Password for 'https://llainSregdor@github.com':
Counting objects: 10, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (10/10), done.
Writing objects: 100% (10/10), 102.53 KiB | 14.65 MiB/s, done.
Total 10 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
To https://github.com/llainSregdor/CSC2408-Assignment3.git
   de0338b..7ed425f master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'

```