This guide includes:

* SSH connection
* Creating the folder and code files
* Using nano to edit
* Compiling and testing
* Capturing .pcap files
* Preparing your submission

**🖥️ PART 1: Connect to Your Azure VM**

**✅ Step 1: Copy Your SSH Command**

Use the SSH command provided by Azure Labs (example below):

ssh -p 5201 in2011@lab-xxxxxxxxxxxxxxxxxxxx.uksouth.cloudapp.azure.com

Replace the hostname with your actual one.

**✅ Step 2: Paste in PowerShell or Terminal**

Open **PowerShell** (or Terminal on macOS/Linux), then paste and run the command.

**✅ Step 3: Enter Password**

When prompted for the password, type:

Azure1234

(Note: It won’t show characters — that’s normal)

**📁 PART 2: Set Up Coursework Directory and Files**

**✅ Step 4: Create a Folder**

mkdir Coursework3

cd Coursework3

**✅ Step 5: Add Each Java File Using nano**

**🔹 1. Create StubResolver.java**

nano StubResolver.java

* Paste the complete code for StubResolver
* Save: Ctrl + O, Enter
* Exit: Ctrl + X

**🔹 2. Create Resolver.java**

nano Resolver.java

* Paste full code
* Save and exit

**🔹 3. Create NameServer.java**

nano NameServer.java

* Paste code
* Save and exit

**🔹 4. Create TestStubResolver.java**

nano TestStubResolver.java

* Paste the provided test code
* Save and exit

**🔹 5. Create TestResolver.java**

nano TestResolver.java

* Paste the provided test code
* Save and exit

**🔹 6. Create TestNameServer.java**

nano **TestNameServer**.java

* Paste the provided test code
* Save and exit

**🔹 7. Create README.txt**

nano README.txt

* Paste the full README content I gave earlier in file
* Replace your name, ID, email
* Save and exit

**🧪 PART 3: Compile and Run Your Code**

**✅ Compile All Files**

javac \*.java

**✅ Run Test File**

java TestStubResolver

java TestResolver

java TestNameServer

This will:

* Trigger DNS queries
* Test A, TXT, CNAME records using your StubResolver , etc

**📦 PART 4: Capture Network Traffic for .pcap Files**

You need .pcap files to prove your programs are working.

**📁 1. Capture for StubResolver.java**

Start tcpdump:

sudo tcpdump -i any udp port 53 -w stubresolver.pcap

In **another tab**, run:

java TestStubResolver

Then return to tcpdump tab and stop with:

Ctrl + C

✅ This creates stubresolver.pcap

**📁 2. Capture for NameServer.java**

Start your server:

java NameServer 5300

Open another tab and run:

dig @127.0.0.1 -p 5300 moodle4.city.ac.uk A

Then capture with:

sudo tcpdump -i any udp port 5300 -w nameserver.pcap

Run dig again to send a query while capturing, then stop with Ctrl + C.

✅ This creates nameserver.pcap

**✅ .pcap Requirements Summary:**

| **Java File** | **Required .pcap** | **How to Create** |
| --- | --- | --- |
| StubResolver.java | ✅ stubresolver.pcap | Run TestStubResolver while capturing port 53 |
| NameServer.java | ✅ nameserver.pcap | Run dig against NameServer while capturing port 5300 |
| Resolver.java | 🟡 (Optional, captured via NameServer) | Can reuse nameserver.pcap to show iterative queries |

**🧹 PART 5: Clean Up Before Submission**

**✅ Remove .class files (optional but recommended)**

rm \*.class

**📦 PART 6: Zip the Folder for Submission**

**Go up one directory:**

cd ..

**Create a zip:**

zip -r Coursework3.zip Coursework3

**📤 PART 7: Download to Your Local PC**

Open PowerShell on your PC and run:

scp -P 5201 -r in2011@lab-xxxxxxxxxxxxxxxx.uksouth.cloudapp.azure.com:~/Coursework3.zip .

✅ It will download Coursework3.zip to your current directory.

**📬 Final Submission Checklist**

| **Item** | **Required** | **Done** |
| --- | --- | --- |
| StubResolver.java | ✅ Yes | ✅ |
| Resolver.java | ✅ Yes | ✅ |
| NameServer.java | ✅ Yes | ✅ |
| TestStubResolver.java | ✅ Yes | ✅ |
| stubresolver.pcap | ✅ Yes | ✅ |
| nameserver.pcap | ✅ Yes | ✅ |
| README.txt | ✅ Yes | ✅ |
| Coursework3.zip | ✅ Yes | ✅ |