Installing and Running a `.jar` File on Windows, Linux, and macOS

This document describes how to install the required Java environment and run a Java Archive (`.jar`) file on **Windows**, **Linux**, and **macOS**.
These instructions assume that the `.jar` file is already available on your system.

1. Prerequisites (All Operating Systems)

To run a `.jar` file, your system must have **Java Runtime Environment (JRE)** or **Java Development Kit (JDK)** installed.

Verify Java Installation

Open a terminal or command prompt and run:

```
java -version
```

- If a Java version is displayed, Java is already installed.
- If the command is not recognized, Java must be installed as described below.

2. Installing and Running a `.jar` File on Windows

2.1 Install Java on Windows

1. Download Java from the official Oracle website:
    - https://www.oracle.com/java/technologies/downloads/
2. Choose a **Windows x64 Installer**.
3. Run the installer and follow the on-screen instructions.
4. Restart the system if prompted.

2.2 Verify Installation

1. Open **Command Prompt**.

Run:
```
java -version
```

Ensure that a valid Java version is displayed.

2.3 Running the `.jar` File (Command Line – Recommended)

1. Open **Command Prompt**.

Navigate to the directory containing the `.jar` file:

```
cd path\to\jar\file
```

2. Run the `.jar` file:

```
java -jar yourfile.jar
```

2.4 Running the `.jar` File (Double-Click Method)

1. Right-click the `.jar` file.
2. Select **Open with** → **Java(TM) Platform**.
3. If Java is correctly installed, the application will run.

Note: If double-clicking does not work, use the command-line method.

2.5 Common Windows Issues

- **'java' is not recognized**
  → Java is not installed or not added to PATH.
- **Nothing happens on double-click**
  → Use Command Prompt instead.

3. Installing and Running a `.jar` File on Linux

3.1 Install Java on Linux

For Debian/Ubuntu-based systems:

```
sudo apt update
sudo apt install default-jdk
```

For Fedora:

```
sudo dnf install java-latest-openjdk
```

For Arch Linux:

```
sudo pacman -S jdk-openjdk
```

3.2 Verify Installation

```
java -version
```

3.3 Running the `.jar` File

1. Open a terminal.

Navigate to the directory containing the `.jar` file:
```
cd /path/to/jar
```

2. Run:
   ```
   java -jar yourfile.jar
   ```

3.4 (Optional) Make the `.jar` Executable

Grant execute permission:
```
chmod +x yourfile.jar
```

1.

Run:
```
./yourfile.jar
```

2. This works only if the `.jar` file contains a valid `Main-Class` entry.

3.5 Common Linux Issues

- **Permission denied**
  → Use `chmod +x`.
- **No output**
  → The program may be non-interactive or console-based.

4. Installing and Running a `.jar` File on macOS

4.1 Install Java on macOS

Option A: Using Oracle Installer

1. Download macOS installer from:
    - https://www.oracle.com/java/technologies/downloads/
2. Run the `.pkg` file and follow instructions.

Option B: Using Homebrew (Recommended)

Install Homebrew (if not installed):

```
/bin/bash -c "$(curl -fsSL
https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"
```

1. Install Java:
   ```
   brew install openjdk
   ```
2. Add Java to PATH:
   ```
   echo 'export PATH="/opt/homebrew/opt/openjdk/bin:$PATH"' >>
   ~/.zprofile
   ```

```
source ~/.zprofile
```

4.2 Verify Installation

```
java -version
```

4.3 Running the `.jar` File

1. Open **Terminal**.

Navigate to the directory containing the `.jar` file:

```
cd /path/to/jar
```

2. Run:
   ```
   java -jar yourfile.jar
   ```

4.4 macOS Security Warning Fix

If macOS blocks the `.jar` file:

```
xattr -dr com.apple.quarantine yourfile.jar
```

Then run again:

```
java -jar yourfile.jar
```

5. Recommended Execution Method (All OS)

For reliability and consistency across systems, always use:

```
java -jar yourfile.jar
```

Avoid relying on double-click execution.