tools/文件夹下首先无脑安装 exe4j 和 Inno Setup 软件。

整体思路：exe4j 将 jar 包代码逻辑转化为 exe 程序，而 Inno Setup 将 resource 和 jdk，exe 整合到一个 exe 包中。

流程细节：

1. 首先用 IJ 制作一个可运行的无 bug 的 jar 包：
   file < project structure < Artifacts < + < jar < from modules <
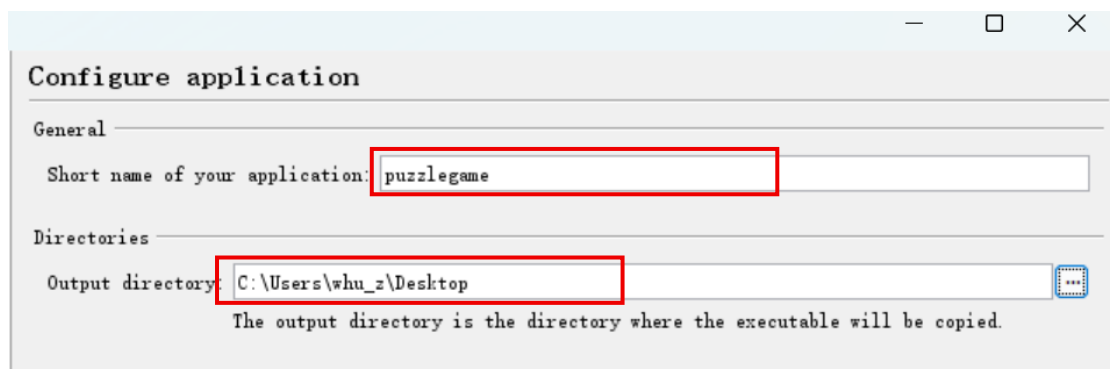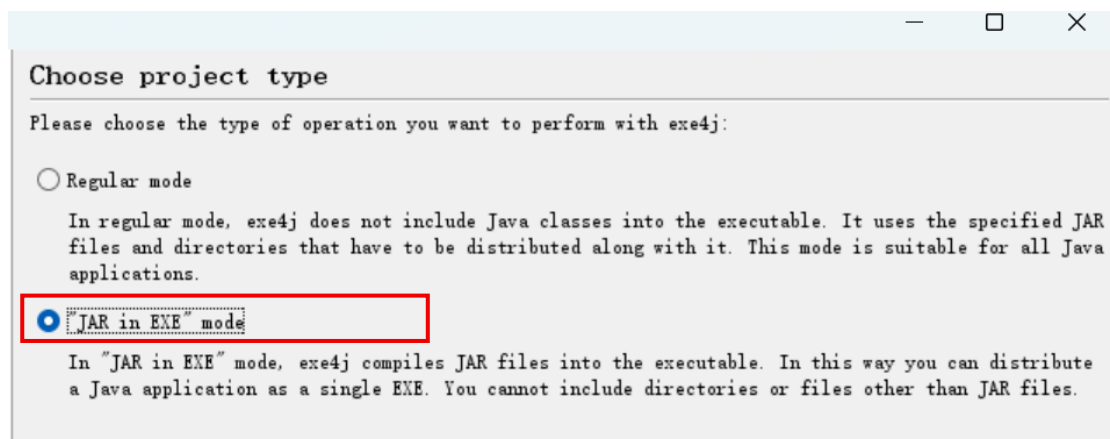   Modules 选择项目根目录 puzzleGame，Main Class 选择 App。
   Directory for META-INF 选择：\puzzleGame\src\main\java
   点击 ok
   菜单栏 build < build Artifacts，在 file < project structure < Artifacts 里面找 output
   directory，有 jar 包：puzzleGame.jar。双击发现可以无 bug 正常运行。

2. exe4j

需要修改的页面如下：

Configure executable

Executable type: ◉ GUI application
                ☐ Allow -console parameter
             ○ Console application
             ○ Service

Executable name: `puzzlegame` .exe

☐ Icon File: [   ] --

☐ Allow only a single running instance of the application

☑ Fail if an exception in the main thread is thrown

☑ Change working directory to: [.] (relative to executable)

▼ Advanced Options

Redirection
Service options
Version info
32-bit or 64-bit
Manifest options

Select the architecture of the generated executable

If the application should run with a 64-bit JVM, you can choose to generate a 64-bit executable.

Please note that the launcher will not run with 32-bit JVMs in that case. This means that it will not run on a 32-bit Windows at all.

☑ Generate 64-bit executable

Configure options for the executable manifest

Execution Level

Please choose the execution level for launching the application on Windows Vista and higher. If unsure, choose "As invoker", this is the default mode for all executables.

- ● As invoker
- ○ Highest available
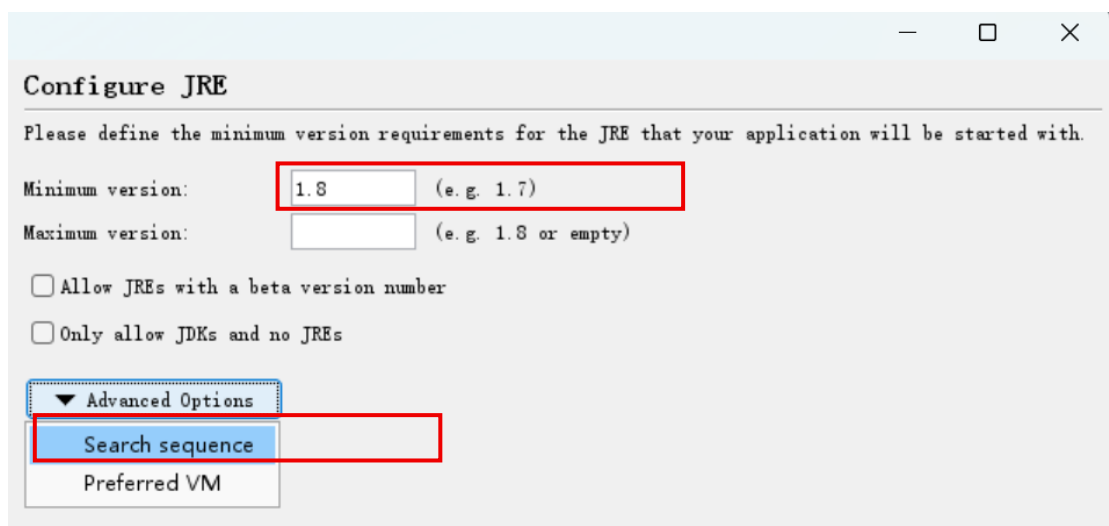- ○ Require administrator

DPI Awareness

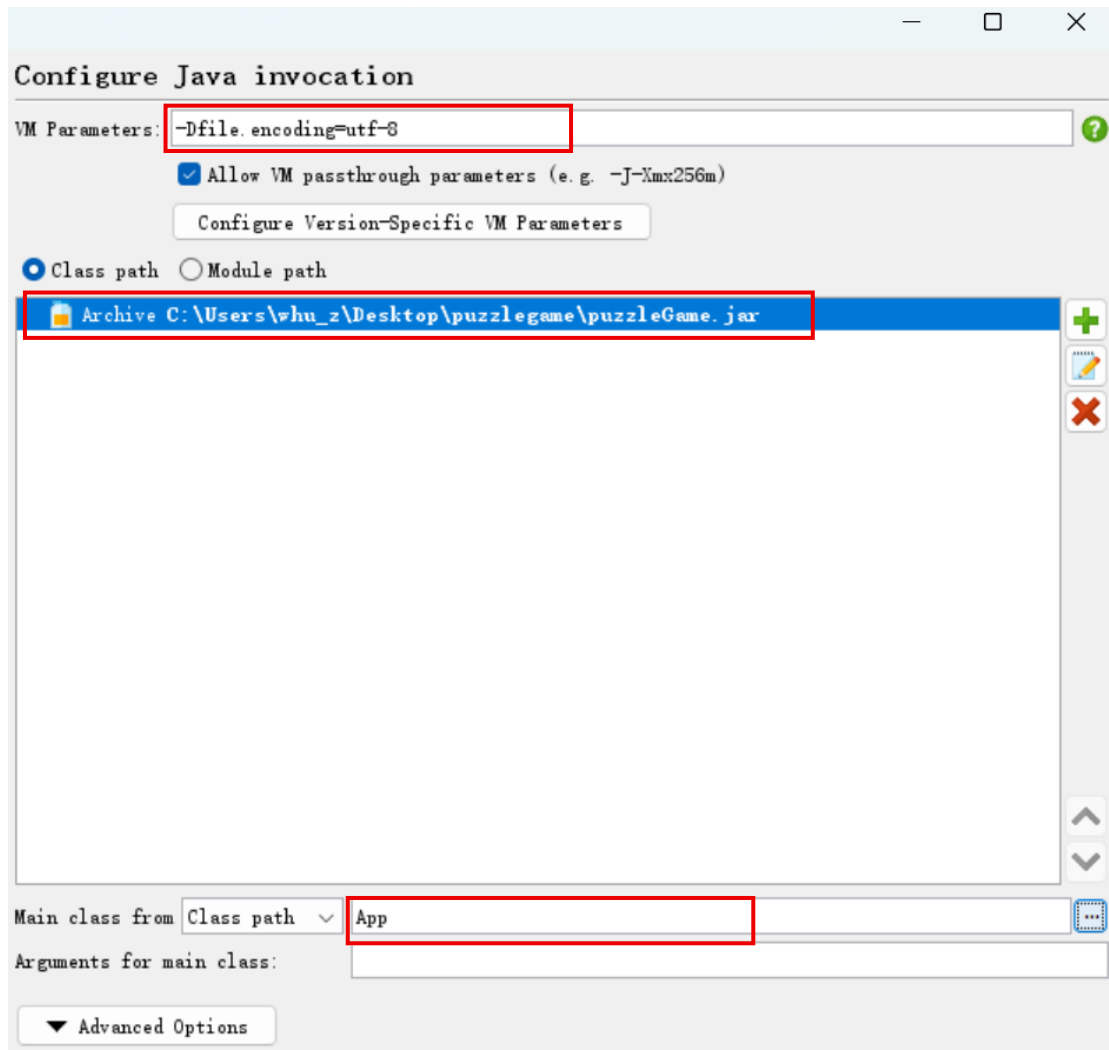By default, launchers are not high-DPI aware and will be scaled up. If your application has been adapted to deal with different DPI settings, you can enable the necessary manifest entry below.
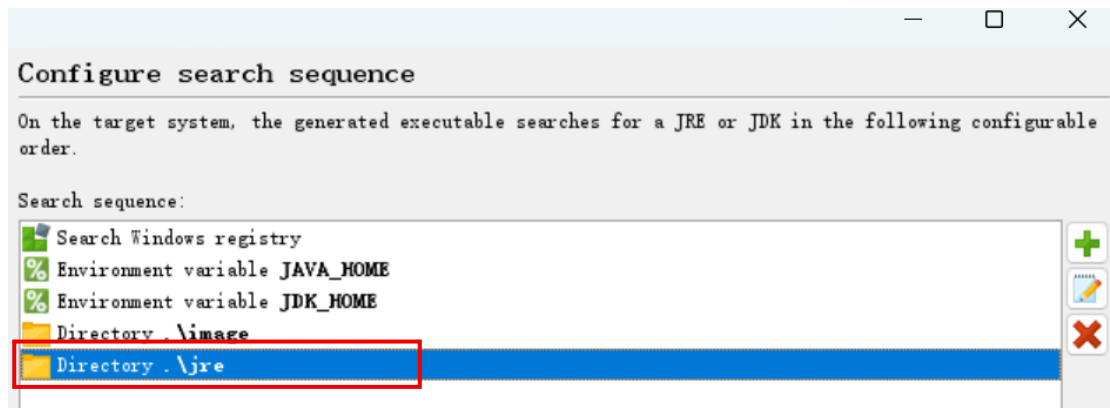
- ○ Always
- ● Never
- ○ Java 9+

For Java 9 or higher, the basic high-DPI handling is acceptable for most applications, so this option activates it if the minimum Java version of the project is at least Java 9.

Configure Java invocation

VM Parameters: `-Dfile.encoding=utf-8` ?

☑ Allow VM passthrough parameters (e.g. -J-Xmx256m)

[Configure Version-Specific VM Parameters]

◉ Class path ○ Module path

📁 Archive C:\Users\whu_z\Desktop\puzzlegame\puzzleGame.jar

Main class from [Class path ∨] `App`

Arguments for main class:

▼ Advanced Options

Configure JRE

Please define the minimum version requirements for the JRE that your application will be started with.

Minimum version: `1.8` (e.g. 1.7)

Maximum version: [   ] (e.g. 1.8 or empty)

☐ Allow JREs with a beta version number

☐ Only allow JDKs and no JREs

▼ Advanced Options

Search sequence

Preferred VM

Configure search sequence

On the target system, the generated executable searches for a JRE or JDK in the following configurable order.

Search sequence:

- Search Windows registry
- Environment variable **JAVA_HOME**
- Environment variable **JDK_HOME**
- Directory .\image
- Directory .\jre

注意：这里的\image 可以不用加的。

Choose the preferred VM

Please choose the preferred JVM for launching the application. This is not an absolute guarantee that the selected JVM will actually be used and it does not cause an error if the JVM is not available.

○ Default VM
● Client hotspot VM
○ Server hotspot VM

然后能在桌面生成一个 puzzlegame.exe

3. Inno Setup:

   file < new

   需要重点关注的地方（修改的页面）：

   期间会让你填一个应用名称，这个名称就是你安装的时候默认的目录名。

Inno Setup Script Wizard

Application Files
Please specify the files that are part of your application.

Application main executable file:

C:\Users\whu_z\Desktop\puzzlegame\puzzlegame.ex   Browse...

☑ Allow user to start the application after Setup has finished
☐ The application doesn't have a main executable file

Other application files:

C:\Users\whu_z\Desktop\puzzlegame\resource*   Add file(s)...
Add folder...
Edit...
Remove

bold = required   < Back   Next >   Cancel

注意：这里的 resource 也可以不用加

Inno Setup Script Wizard

Compiler Settings
Please specify some basic compiler settings.

Custom compiler output folder:

C:\Users\whu_z\Desktop   Browse...

Compiler output base file name:

setup

Custom Setup icon file:

Browse...

Setup password:

< Back   Next >   Cancel

finish 点击之后再点击"否"。

最后一步先修改文件再编译：

添加一行：

```
#define MyAppExeName "puzzlename.exe"
#define MyJreName "jre"
```

再添加一行：

```
[Files]
Source: "C:\Users\whu_z\Desktop\puzzlename.exe"; DestDir: "{app}"; Flags: ignoreversion
Source: "C:\Users\whu_z\Desktop\puzzlegame\resource\*"; DestDir: "{app}"; Flags: ignoreversion recursesubdirs createallsubdirs
Source: "C:\Program Files\Java\jdk-1.8\*"; DestDir: "{app}\{#MyJreName}"; Flags: ignoreversion recursesubdirs createallsubdirs
; NOTE: Don't use "Flags: ignoreversion" on any shared system files
```

注意：前面没有加 resource 文件夹的话，这里最终只会出现 2 行。

绿色三角编译，直到在桌面生成一个 setup.exe 文件，即可。这个 setup.exe 就是我们需要的文件。

测试效果：在纯净的虚拟机 win10 上双击 setup.exe 安装游戏。安装目录如下：