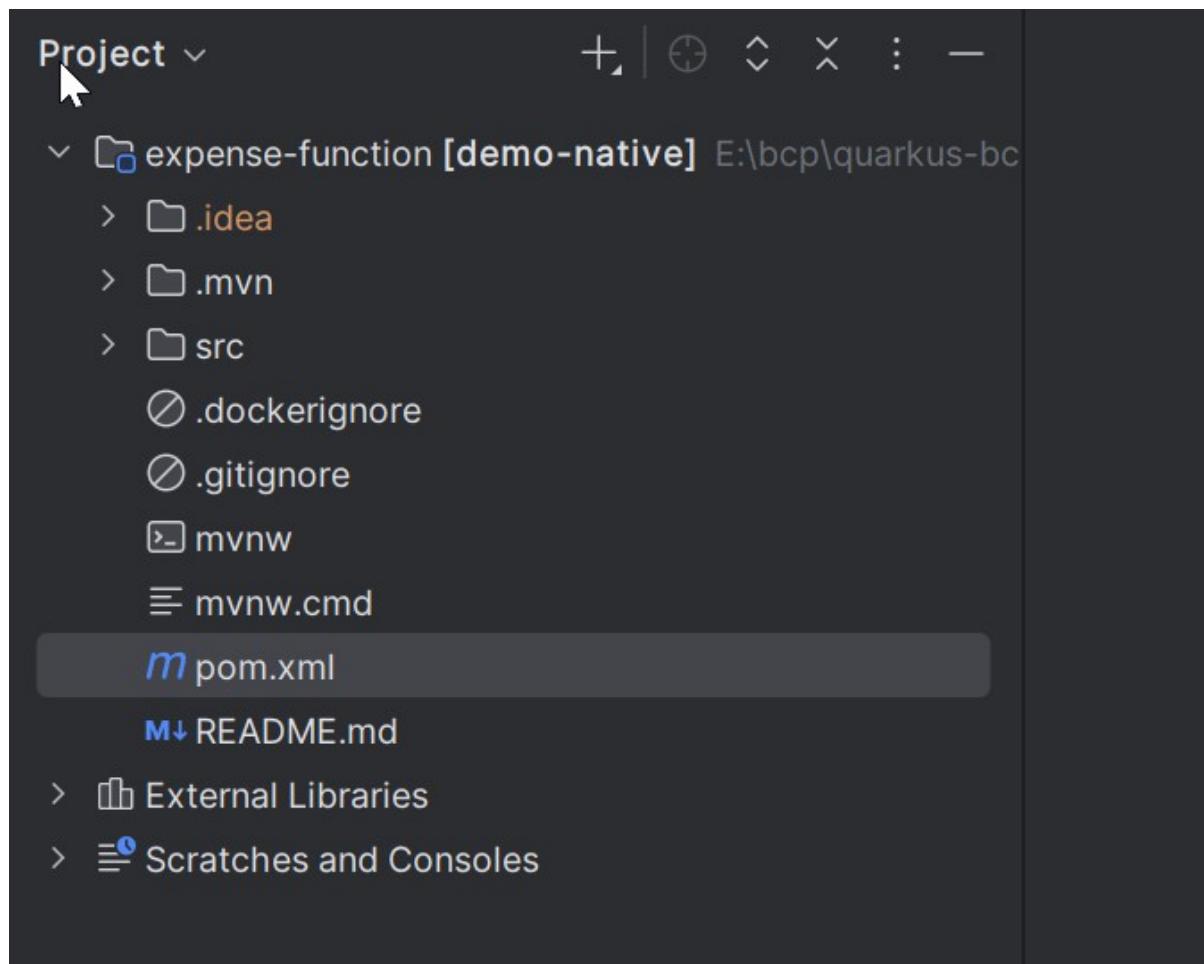


LAB 5: QUARKUS NATIVE

Autor: José Díaz

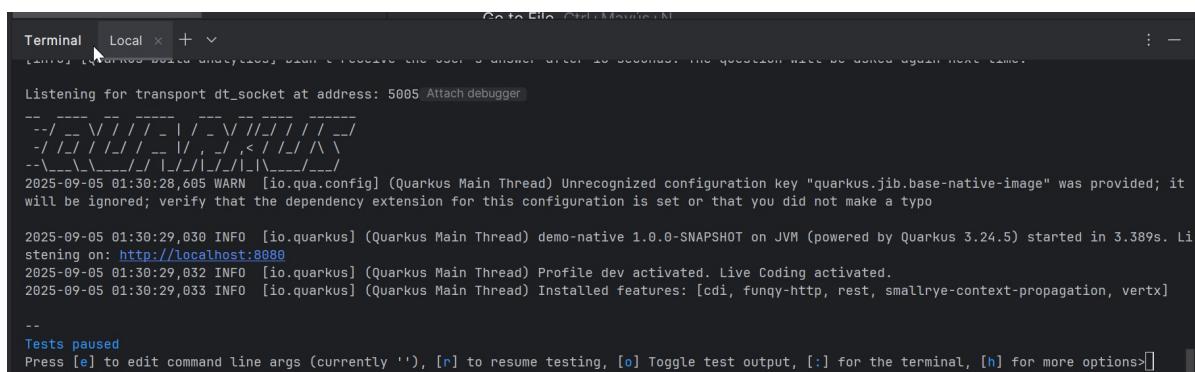
Github Repo: <https://github.com/joedayz/quarkus-bcp-2025.git>

1. Abre el proyecto **expense-function**.



2. Verifica que la aplicación corre sin problemas en modo desarrollo.

2.1 Inicia el modo de desarrollo Quarkus en la terminal con: **mvn quarkus:dev**



```

Terminal Local × + 
[student@workstation develop-native]$ mvn package -Pnative
...output omitted...
[INFO] [io.quarkus.deployment.QuarkusAugmentor] Quarkus augmentation completed in
77157ms
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
...output omitted...

```

2.2 Presiona q para detener la aplicación.

3. Configura el proceso de construcción nativo que usa un constructor contenerizado de Mandrel.
- 3.1 Configura el proceso de construcción nativo para usar un constructor de imagen. Agrega la siguiente línea a src/main/resources/application.properties:

```
quarkus.native.container-build=true
```

3.2 Configura podman como el container runtime. Agrega la siguiente línea a el mismo application.properties:

```
quarkus.native.container-runtime = podman
```

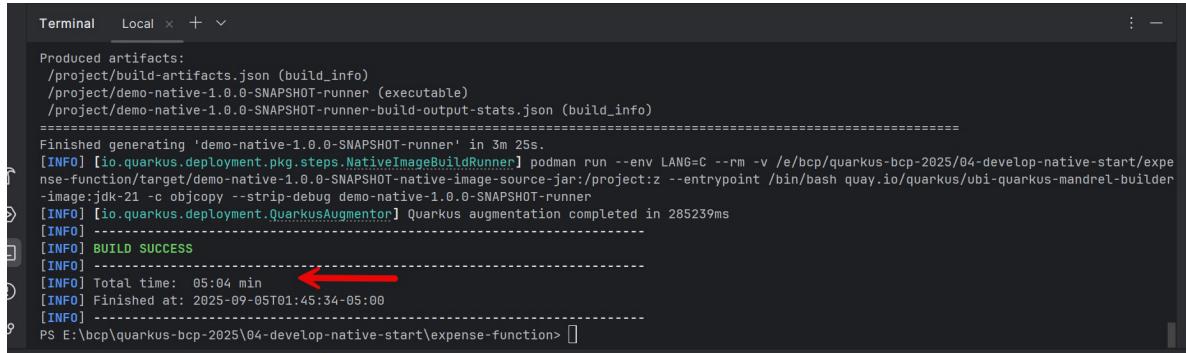
4. Construye la aplicación como ejecutable nativo.
- 4.1 Retorna a la terminal y ejecuta la fase maven package con el profile native.

```
mvn package -Pnative
```

```
[student@workstation develop-native]$ mvn package -Pnative
...output omitted...
[INFO] [io.quarkus.deployment.QuarkusAugmentor] Quarkus augmentation completed in
77157ms
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
...output omitted...
```

Este comando genera el ejecutable nativo en target/expense-function-1.0.0-SNAPSHOT-runner.

NOTA: El proceso de construcción nativo puede tardar varios minutos en completarse.



```

Terminal Local × + ▾
Produced artifacts:
/project/build-artifacts.json (build_info)
/project/demo-native-1.0.0-SNAPSHOT-runner (executable)
/project/demo-native-1.0.0-SNAPSHOT-runner-build-output-stats.json (build_info)
=====
Finished generating 'demo-native-1.0.0-SNAPSHOT-runner' in 3m 25s.
[INFO] [io.quarkus.deployment.pkg.steps.NativeImageBuildRunner] podman run --env LANG=C --rm -v /e/bcp/quarkus-bcp-2025/04-develop-native-start/expense-function/target/demo-native-1.0.0-SNAPSHOT-native-image-source-jar:/project:z --entrypoint /bin/bash quay.io/quarkus/ubi-quarkus-mandrel-builder-image:jdk-21 -c objcopy --strip-debug demo-native-1.0.0-SNAPSHOT-runner
[INFO] [io.quarkus.deployment.QuarkusAugmentor] Quarkus augmentation completed in 285239ms
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 05:04 min ←
[INFO] Finished at: 2025-09-05T01:45:34-05:00
[INFO]
PS E:\bcp\quarkus-bcp-2025\04-develop-native-start\expense-function> []

```

- Quarkus delega la compilación a Mandrel/GraalVM dentro del contenedor.
Este contenedor está basado en Linux (UBI = Universal Base Image de Red Hat).

Resultado → el binario que se genera (expense-function-1.0.0-SNAPSHOT-runner) es un ejecutable Linux ELF, no un .exe de Windows.

- Si quieres crear un ejecutable de windows, tendrás que usar el GraalVM instalado en tu máquina ubicable en el PATH y poner a false la propiedad:

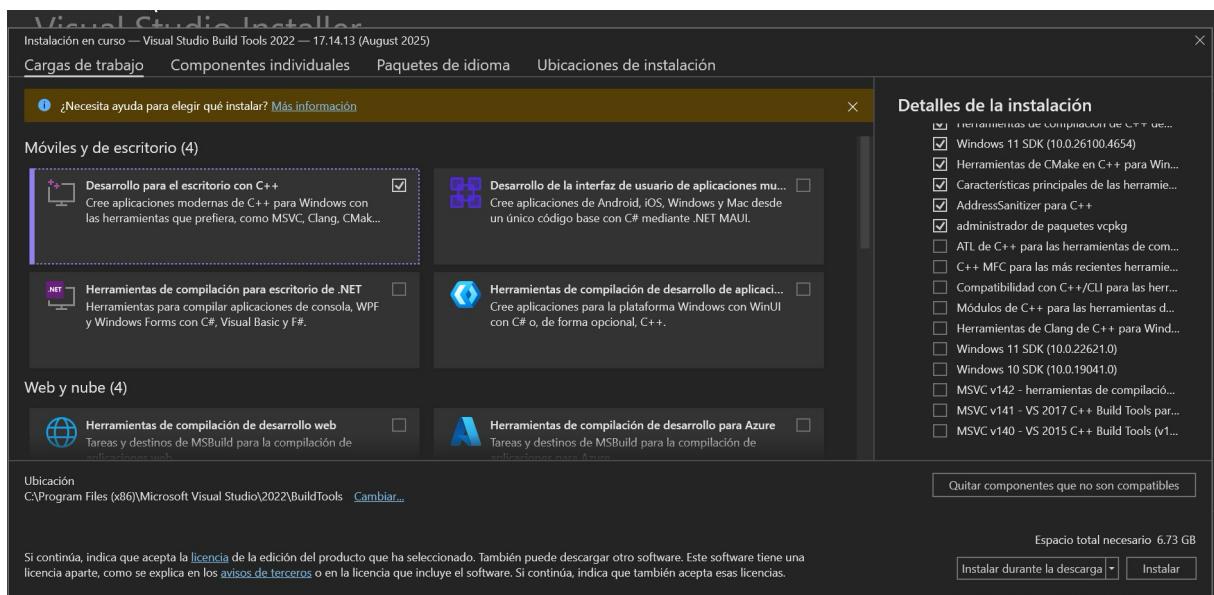
```
quarkus.native.container-build=false
```

NOTA: Si te sale este error, es porque te falta unos utilitarios de C++

Error: Failed to find '**vcvarsall.bat**' in a Visual Studio installation.
 Please make sure that Visual Studio 2022 version 17.1.0 or later is installed on your system. You can download it at <https://visualstudio.microsoft.com/downloads/>. If this error persists, please try and run GraalVM Native Image in an x64 Native Tools Command Prompt or file a ticket.

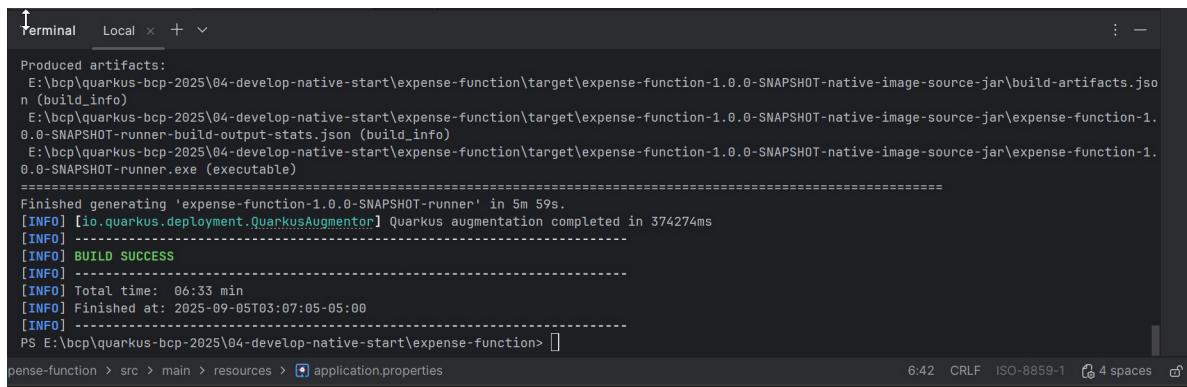
Bájate mejor: <https://visualstudio.microsoft.com/visual-cpp-build-tools>

Se necesita:



NOTA: Lo recomendable es **instalar la edición estable** (*Community o Build Tools*). Por ningún motivo instalen Preview. GraalVM no lo reconoce.

7. Ejecutar nuevamente: **mvn package -Pnative**.



```

Terminal Local + 
Produced artifacts:
E:\bcp\quarkus-bcp-2025\04-develop-native-start\expense-function\target\expense-function-1.0.0-SNAPSHOT-native-image-source-jar\build-artifacts.json (build_info)
E:\bcp\quarkus-bcp-2025\04-develop-native-start\expense-function\target\expense-function-1.0.0-SNAPSHOT-runner-build-output-stats.json (build_info)
E:\bcp\quarkus-bcp-2025\04-develop-native-start\expense-function\target\expense-function-1.0.0-SNAPSHOT-native-image-source-jar\expense-function-1.0.0-SNAPSHOT-runner.exe (executable)
=====
Finished generating 'expense-function-1.0.0-SNAPSHOT-runner' in 5m 59s.
[INFO] [io.quarkus.deployment.QuarkusAugmentor] Quarkus augmentation completed in 374274ms
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 06:33 min
[INFO] Finished at: 2025-09-05T03:07:05-05:00
[INFO] -----
PS E:\bcp\quarkus-bcp-2025\04-develop-native-start\expense-function>

```

- Ejecuta el ejecutable nativo y verifica que la aplicación trabaja perfectamente.
- Ejecuta la aplicación. El start up time debería ser dos veces más rápido que antes.



.\target\expense-function-1.0.0-SNAPSHOT-runner.exe

8.2 Abre una nueva terminal y ejecuta un request a la aplicación. El endpoint /expenses debería retornar la lista de expenses.

```
[student@workstation develop-native]$ curl http://0.0.0.0:8080/expenses
[{"uuid": "e33d5ec9-bb45-4c14-b74e-edeb6667410b", "name": "example-expense-1", "creationDate": "2022-10-17T12:42:20.145895", "paymentMethod": "CREDIT_CARD", "amount": 83}, {"uuid": "ce606da2-ac7b-4c6e-bc5e-0a6c1019943a", "name": "example-expense-21", "creationDate": "2022-10-17T12:42:20.145896", "paymentMethod": "CASH", "amount": 21}]
```

Windows powershell:

```
Invoke-WebRequest -Uri "http://localhost:8080/expenses"
```

8.3 Detén la aplicación con Ctrl+c.

- Construye la aplicación como una imagen nativa de contenedor.
9.1 Hay que instalar la extensión quarkus-container-image-jib

```
mvn quarkus:add-extension -Dextension=container-image-jib
```

9.2 Ajusta la configuración para construir una imagen de contenedor nativa. Agrega la siguiente línea al application.properties.

```
quarkus.container-image.build=true
```

NOTA: Vuelve a true la siguiente propiedad → quarkus.native.container-build=true

9.3 Retorna a la terminal y construye la aplicación con el profile native: **mvn package -Pnative**.

```

↓
Terminal Local ×
[INFO] [io.quarkus.container.image.jib.deployment.JibProcessor] Starting (local) container image build for native binary using jib.
[INFO] [io.quarkus.container.image.jib.deployment.JibProcessor] Using podman to run the native image builder
[WARNING] [io.quarkus.container.image.jib.deployment.JibProcessor] Base image 'quay.io/quarkus/quarkus-micro-image:2.0' does not use a specific image digest - build may not be reproducible
[INFO] [io.quarkus.container.image.jib.deployment.JibProcessor] Using base image with digest: sha256:7264f644de3c1c0c0aee373865a737f38fc5a8fd7e1ae07d007aa753030ff
[INFO] [io.quarkus.container.image.jib.deployment.JibProcessor] Container entrypoint set to [./application]
[INFO] [io.quarkus.container.image.jib.deployment.JibProcessor] Created container image josed/expense-function:1.0.0-SNAPSHOT (sha256:6d60bdde875e03c41724e1d9ac52487148328b16f360af26a5fb771c8a4d1f4)

[INFO] [io.quarkus.deployment.QuarkusAugmentor] Quarkus augmentation completed in 209410ms
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 03:46 min
[INFO] Finished at: 2025-09-05T03:19:42-05:00
[INFO] -----
PS E:\bcp\quarkus-bcp-2025\04-develop-native-start\expense-function> []

```

9.4 Usar podman para ejecutar el contenedor nativo que has construido:

```
podman run -p 8080:8080 --rm josed/expense-function:1.0.0-SNAPSHOT
```

```

↓
[INFO] [io.quarkus.deployment.QuarkusAugmentor] Quarkus augmentation completed in 209410ms
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 03:46 min
[INFO] Finished at: 2025-09-05T03:19:42-05:00
[INFO] -----
PS E:\bcp\quarkus-bcp-2025\04-develop-native-start\expense-function> podman run -p 8080:8080 --rm josed/expense-function:1.0.0-SNAPSHOT
--/ --\ \ / / / / | / _ \ \ / / / / / / / /
- / / / / / / / / / , / , < / / / \ \
- \ \ \ \ \ \ \ \ \ / / / / / / / / / / / / /
2025-09-05 08:21:26,163 INFO [io.quarkus] (main) expense-function 1.0.0-SNAPSHOT native (powered by Quarkus 3.24.5) started in 0.054s. Listening on : http://0.0.0.0:8080
2025-09-05 08:21:26,164 INFO [io.quarkus] (main) Profile prod activated.
2025-09-05 08:21:26,164 INFO [io.quarkus] (main) Installed features: [cdi, funqy-http, rest, smallrye-context-propagation, vertx]
[]

expense-function > src > main > resources > application.properties
7:25 - CDRF - ISO 20250-1 - 4 spaces - 0

```

9.5 Verificar el endpoint: curl <http://localhost:8080/expenses>

```
[student@workstation develop-native]$ curl http://localhost:8080/expenses
[{"uuid": "e33d5ec9-bb45-4c14-b74e-edeb6667410b", "name": "example-expense-1", "creationDate": "2022-10-17T12:42:20.145895", "paymentMethod": "CREDIT_CARD", "amount": 83}, {"uuid": "ce606da2-ac7b-4c6e-bc5e-0a6c1019943a", "name": "example-expense-21", "creationDate": "2022-10-17T12:42:20.145896", "paymentMethod": "CASH", "amount": 21}]
```



9.6 Termina el contenedor con CTRL+C.

Listo. Hemos terminado.

enjoy!

Jose

