

Jhonnatan Peñate

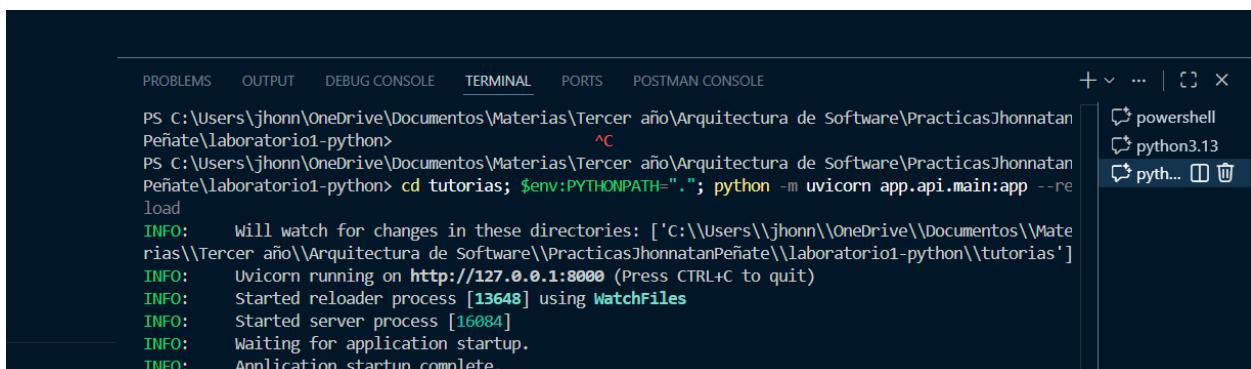
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Arquitectura de Software

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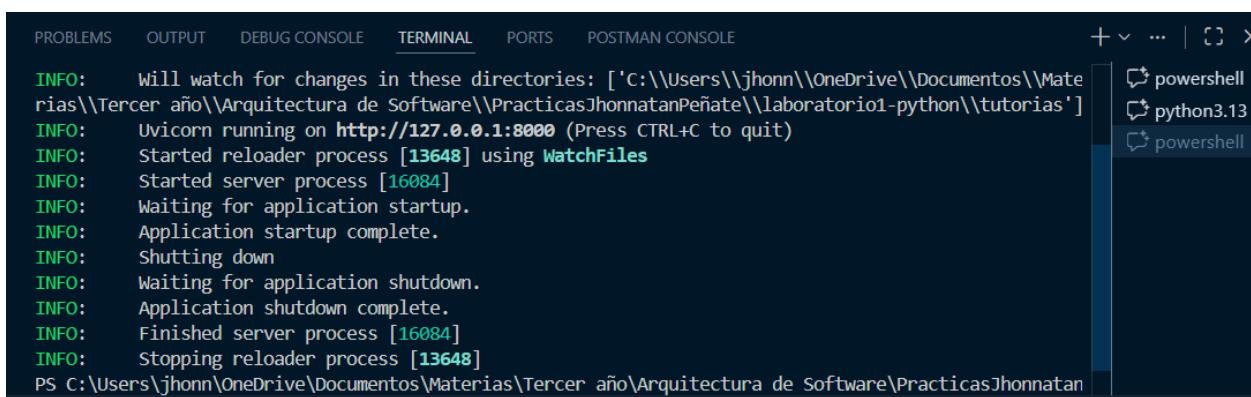
## Prácticas 1 y 2

```
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Prácticas\jhonnatanPeñate\laboratorio1-python\tutorias> $env:PYTHONPATH=".;" python -m pytest -q
..
[100%]
2 passed in 0.10s
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Prácticas\jhonnatanPeñate\laboratorio1-python\tutorias>
```



This screenshot shows a terminal window within a development environment. The terminal tab is active, displaying the command line interface. The user has navigated to the directory containing the application code and run it using the command `python -m unicorn app.api.main:app --reload`. The application is listening on port 8000. The terminal output shows the application's startup logs, indicating it is watching for changes in specific directories and has started a server process.

```
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Prácticas\jhonnatanPeñate\laboratorio1-python> ^C
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Prácticas\jhonnatanPeñate\laboratorio1-python> cd tutorias; $env:PYTHONPATH=".;" python -m unicorn app.api.main:app --reload
INFO: Will watch for changes in these directories: ['C:\\\\Users\\\\jhonn\\\\OneDrive\\\\Documentos\\\\Materias\\\\Tercer año\\\\Arquitectura de Software\\\\Prácticas\\\\jhonnatanPeñate\\\\laboratorio1-python\\\\tutorias']
INFO: Unicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: Started reloader process [13648] using WatchFiles
INFO: Started server process [16084]
INFO: Waiting for application startup.
INFO: Application startup complete.
```



This screenshot shows the continuation of the terminal session from the previous one. The user has stopped the application using the keyboard interrupt key (`Ctrl+C`). The terminal output shows the application shutting down, waiting for shutdown, and finally completing the shutdown process.

```
INFO: Will watch for changes in these directories: ['C:\\\\Users\\\\jhonn\\\\OneDrive\\\\Documentos\\\\Materias\\\\Tercer año\\\\Arquitectura de Software\\\\Prácticas\\\\jhonnatanPeñate\\\\laboratorio1-python\\\\tutorias']
INFO: Unicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: Started reloader process [13648] using WatchFiles
INFO: Started server process [16084]
INFO: Waiting for application startup.
INFO: Application startup complete.
INFO: Shutting down
INFO: Waiting for application shutdown.
INFO: Application shutdown complete.
INFO: Finished server process [16084]
INFO: Stopping reloader process [13648]
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Prácticas\jhonnatanPeñate\laboratorio1-python>
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    POSTMAN CONSOLE

```
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\PracticasJhonnatanPeñate\laboratorio1-python> ^C
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\PracticasJhonnatanPeñate\laboratorio1-python> cd tutorias; $env:PYTHONPATH=".": python -m uvicorn app.api.main:app --reload --host 127.0.0.1 --port 8000
INFO:      Will watch for changes in these directories: ['C:\\Users\\\\jhonn\\\\OneDrive\\\\Documentos\\\\Materias\\\\Tercer año\\\\Arquitectura de Software\\\\PracticasJhonnatanPeñate\\\\laboratorio1-python\\\\tutorias']
INFO:      Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO:      Started reloader process [13084] using WatchFiles
INFO:      Started server process [22548]
INFO:      Waiting for application startup.
INFO:      Application startup complete.
```

```
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\PracticasJhonnatanPeñate\laboratorio1-python> ^C
PS C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\PracticasJhonnatanPeñate\laboratorio1-python> cd tutorias; $env:PYTHONPATH=".": python -m uvicorn app.api.main:app --host 127.0.0.1 --port 8001
INFO:      Started server process [24652]
INFO:      Waiting for application startup.
INFO:      Application startup complete.
INFO:      Uvicorn running on http://127.0.0.1:8001 (Press CTRL+C to quit)
```

C:\WINDOWS\system32\cmd. x + v

```
use USE version 6.0.0, Copyright (C) 1999-2021 University of Bremen
use> open Cars.cmd
Cars.cmd> !create smallCar : Car
Cars.cmd> !create bigCar : Car
y.u
Cars.cmd> !create bigCar2 : Car
Cars.cmd>
Cars.cmd> !set smallCar.mileage := 2000
Cars.cmd> !set bigCar.mileage:= -1500
Cars.cmd> !set bigCar2.mileage:= 1000
Cars.cmd>
use> check
+PY checking structure...
+PY checked structure in 0ms.
+PY checking invariants...
+PY checking invariant (1) 'Car::MileageNotNegative': FAILED.
    -> false : Boolean
checked 1 invariant in 0.000s, 1 failure.
use>
```

USE: Cars.use

Log  
compiling specification C:\Users\jhonn1\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Prácticas\jhonnatanPeñate\laboratori done.  
Model Cars (1 class, 0 associations, 1 invariant, 0 operations, 0 pre-/postconditions, 0 state machines)

C:\WINDOWS\system32\cmd. x + v

```
University.cmd> !set cl.title := 'Arquitectura'
<input>:1:0: Variable 'cl' in expression '<no string representation>' is undefined
University.cmd> !set cl.credits := 4-- 3) crear matriz; calcula (Enrollment es asociado
<input>:1:0: Variable 'cl' in expression '<no string representation>' is undefined
University.cmd> !create el : Enrollment
<input>:1:0: Expected type name, found 'Enrollment'.
University.cmd> !set el.grade := 95
<input>:1:0: Variable 'el' in expression '<no string representation>' is undefined
University.cmd> !insert (s1, cl) into Enrollment -- crea el vínculo de la asociación
<input>:1:0: Association 'Enrollment' does not exist.
University.cmd>
use> check
checking structure...
checked structure in 0ms.
checking invariants...
checking invariant (1) 'Reserva::EstadoValido': OK.
checking invariant (2) 'Reserva::TieneTutorYEstudiante': OK.
checking invariant (3) 'Tutor::NoDobleReservaMismoHorario': OK.
checked 3 invariants in 0.015s, 0 failures.
use> Reservas.cmd
Error: Unknown command 'Reservas.cmd'. Try 'help'.
use> check
checking structure...
checked structure in 16ms.
checking invariants...
checking invariant (1) 'Reserva::EstadoValido': OK.
checking invariant (2) 'Reserva::TieneTutorYEstudiante': OK.
checking invariant (3) 'Tutor::NoDobleReservaMismoHorario': OK.
checked 3 invariants in 0.016s, 0 failures.
use>
```

USE: Reservas.use

Log  
compiling specification C:\Users\jhonn1\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Prácticas\jhonnatanPeñate\laboratori done.  
Model Tutors (10 classes, 8 associations, 3 invariants, 2 operations, 0 pre-/postconditions, 0 state machines)

```

Reservas.cmd> !create r3 : Reserva
<input>:1:0: Expected type name, found 'Reserva'.
Reservas.cmd> !set r3.fechaHora := '2026-01-20T12:00'
<input>:1:0: Variable 'r3' in expression '<no string representation>' is u
Reservas.cmd> !insert (t1, r3) into TutorReserva
<input>:1:0: Association 'TutorReserva' does not exist.
Reservas.cmd> !insert (e1, r3) into EstudianteReserva
<input>:1:0: Association 'EstudianteReserva' does not exist.
Reservas.cmd>
d use> check
checking structure...
checked structure in 0ms.
S checking invariants...
[1] checking invariant (1) 'Reserva::EstadoValido': OK.
[2] checking invariant (2) 'Reserva::TieneTutorYEstudiante': OK.
e checking invariant (3) 'Tutor::NoDobleReservaMismoHorario': OK.
checked 3 invariants in 0.016s, 0 failures.
use> !set r2.estado := #CANCELADA
<input>:1:0: Variable 'r2' in expression '<no string representation>' is u
use> !set r3.estado := #CREADA
<input>:1:0: Variable 'r3' in expression '<no string representation>' is u
use> check
checking structure...
checked structure in 0ms.
S checking invariants...
[1] checking invariant (1) 'Reserva::EstadoValido': OK.
[2] checking invariant (2) 'Reserva::TieneTutorYEstudiante': OK.
[3] checking invariant (3) 'Tutor::NoDobleReservaMismoHorario': OK.
checked 3 invariants in 0.000s, 0 failures.
use>

```

```

C:\WINDOWS\system32\cmd. x + ~
Tutorias.cmd> !insert (e1, r3) into EstudianteReserva
Tutorias.cmd> -- =====
Tutorias.cmd> -- VERIFICAR INVARIANTES
Tutorias.cmd> -- =====
Tutorias.cmd> -- En el prompt de USE ejecutar:
Tutorias.cmd> -- check
Tutorias.cmd> --
Tutorias.cmd> -- Para corregir violaciones:
Tutorias.cmd> -- !set r2.estado := #CANCELADA
Tutorias.cmd> -- !set r3.estado := #CREADA
Tutorias.cmd> -- check
Tutorias.cmd>
use> check
checking structure...
Multiplicity constraint violation in association 'ReservaUbicacion':
Object 'r2' of class 'Reserva' is connected to 0 objects of class 'Ubica
at association end 'ubicacion' but the multiplicity is specified as '1'.
Multiplicity constraint violation in association 'ReservaUbicacion':
Object 'r3' of class 'Reserva' is connected to 0 objects of class 'Ubica
at association end 'ubicacion' but the multiplicity is specified as '1'.
checked structure in 32ms.
checking invariants...
checking invariant (1) 'Reserva::EstadoValido': FAILED.
-> false : Boolean
checking invariant (2) 'Reserva::TieneTutorYEstudiante': OK.
checking invariant (3) 'Tutor::NoDobleReservaActivaMismoHorario': FAILED.
-> false : Boolean
checked 3 invariants in 0.007s, 2 failures.
use>

```

C:\WINDOWS\system32\cmd. +

```

University.cmd> !create s1 : Student
University.cmd> !set s1.id := 1
University.cmd> !set s1.name := 'Ana'
University.cmd> !set s1.email := 'ana@uni.edu'
University.cmd> !create s2 : Student
University.cmd> !set s2.id := 2
University.cmd> !set s2.name := 'Luis'
University.cmd> !set s2.email := 'ana@uni.edu' -- viola UniqueEmail-- 2) crear c
University.cmd> !create c1 : Course
University.cmd> !set c1.code := 'ARQ101'
University.cmd> !set c1.title := 'Arquitectura'
University.cmd> !set c1.credits := 4-- 3) crear matrícula (Enrollment es asociat
University.cmd> !create e1 : Enrollment
<input>:1:0: Cannot instantiate association class 'Enrollment' without participant
University.cmd> !set e1.grade := 95
<input>:1:0: Variable 'e1' in expression '<no string representation>' is undefined
University.cmd> !insert (s1, c1) into Enrollment -- crea el vínculo de la asociaci
University.cmd>
use> check
checking structure...
checked structure in 0ms.
checking invariants...
checking invariant (1) 'Course::CreditsPositive': OK.
checking invariant (2) 'Enrollment::GradeRange': FAILED.
-> false : Boolean
checking invariant (3) 'Student::IdPositive': OK.
checking invariant (4) 'Student::UniqueEmail': FAILED.
-> false : Boolean
checked 4 invariants in 0.015s, 2 failures.
use>
```

USE: University.use

File Edit State View Plugins Help OCL

Log  
compiling specification C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Práctica 1 done.

Model University (3 classes, 1 association, 4 invariants, 0 operations, 0 pre-/postconditions, 0 state machines)

C:\WINDOWS\system32\cmd. +

```

University.cmd> !set c1.credits := 4-- 3) crear matrícula (Enrollment es
University.cmd> !create e1 : Enrollment
<input>:1:0: Cannot instantiate association class 'Enrollment' without par
University.cmd> !set e1.grade := 95
<input>:1:0: Variable 'e1' in expression '<no string representation>' is u
University.cmd> !insert (s1, c1) into Enrollment -- crea el vínculo de la l
University.cmd>
use> check
checking structure...
checked structure in 0ms.
checking invariants...
checking invariant (1) 'Course::CreditsPositive': OK.
checking invariant (2) 'Enrollment::GradeRange': FAILED.
-> false : Boolean
checking invariant (3) 'Student::IdPositive': OK.
checking invariant (4) 'Student::UniqueEmail': FAILED.
-> false : Boolean
checked 4 invariants in 0.016s, 2 failures.
use> !set s2.email := 'luis@uni.edu'
use> check
checking structure...
checked structure in 0ms.
checking invariants...
checking invariant (1) 'Course::CreditsPositive': OK.
checking invariant (2) 'Enrollment::GradeRange': FAILED.
-> false : Boolean
checking invariant (3) 'Student::IdPositive': OK.
checking invariant (4) 'Student::UniqueEmail': OK.
checked 4 invariants in 0.016s, 1 failure.
use>
```

USE: University.use

File Edit State View Plugins Help OCL

Log  
compiling specification C:\Users\jhonn\OneDrive\Documentos\Materias\Tercer año\Arquitectura de Software\Práctica 1 done.

Model University (3 classes, 1 association, 4 invariants, 0 operations, 0 pre-/postconditions, 0 state machines)