
Getting started

AdaCore

The purpose of this exercise is to discover the basics of the GNAT toolchain on Windows.

Question 1

We will firstly build a simple project using the command line. The project file is at the root of the tutorial directory, and it is called `simple.gpr`. You can build it with the command:

```
gprbuild -Psimple
```

This will compile all the sources of the project, as well as the support libraries needed to execute your source code on Windows. Then run the command:

```
obj\main
```

Note that, this time, the project file specifies the sub-directory `obj` to hold all object code and binaries. When this is done you can clean up your workspace of the executable and object files, by running:

```
gprclean -Psimple
```

Question 2

During the training, we will use `GNAT Studio`, AdaCore's integrated development environment. You can run it to open the simple project via:

```
gnatstudio -Psimple
```

After that, you can use the “Build and Run” action, that is accessible via the play icon in the main toolbar, to automate what we did in part 1. It will rebuild everything necessary and run the resulting program.

Question 3

Depending on your computer's screen and its resolution, the `Windows` and `Ball` might be a bit small. Adjust the `Width`, `Height` and `Ball_Radius` constants to make the `Window` and `Ball` size more suitable for your computer.

Alter the colour of the `Ball`. Hint: Right-click on the literal “Red” in the call to `Draw_Sphere`, and select “Goto Declaration”. This will show you the specification of the package where `Red` (and other colours) are declared.

Question 4

Right click on other entities in the `Main` program (types, variables, subprograms etc.) and use “Goto Declaration” and “Goto Body” to navigate the program source. “Goto Declaration” is probably the most useful GNAT Studio feature for navigating and understanding large programs.

Extra credit: How does the GNAT Studio editor know where to find the declaration of an entity like “Red”?

Question 5

You can use GNAT Studio to debug your program, by clicking the “Build and Debug” action. Let’s do a quick debugging session on the main program.

1. Click on the Build and Debug icon
2. GNAT Studio will go into debugging perspective, which you can see because a few more views have popped up.
3. Open the main source file, `main.adb`
4. Click on the line number “63”, and then click on the “Debug Continue” icon in the main toolbar. The program will stop at the first executable line. Click “Debug Continue” again and program execution should then stop at line 63 of the main file.
5. Click on the “debug next” icon and see the program execution going to the next line. Do it again to reach line 65 – the call to `Draw_Sphere`.
6. Click on the “debug step” icon to step into the `Draw_Sphere` subprogram. The file `display-basic.adb` should then open.
7. Click on the “debug finish” icon to step out of the subprogram.
8. You can then repeatedly press the “debug continue” button, and see the ball move slowly on your board’s screen.