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## **Ada Fundamentals - Lab 2 - Basic Types**

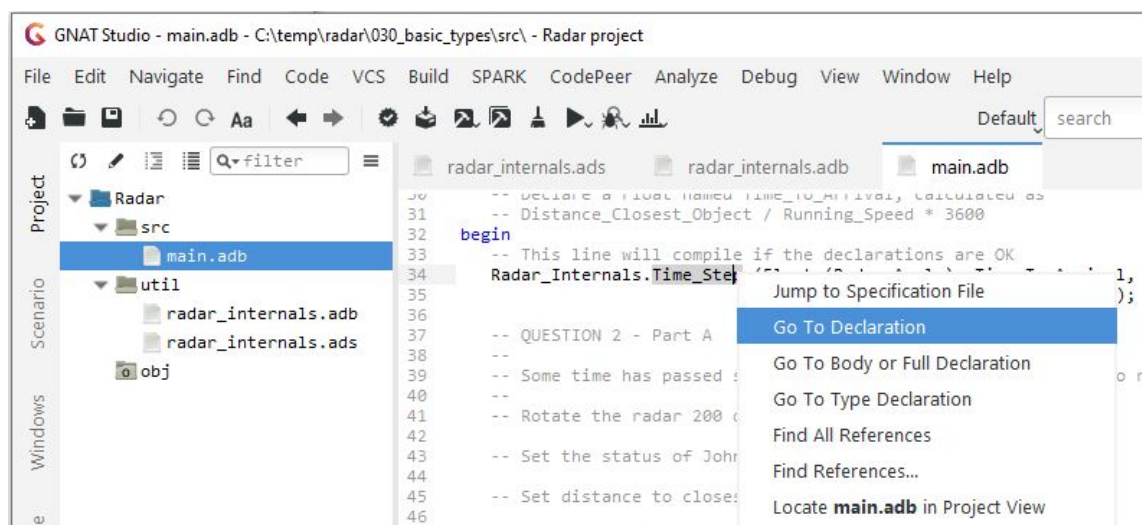
AdaCore

The purpose of this lab is to present basic Ada types and some advanced GNAT Studio features.

## Code Navigation

### Finding Declaration or Implementation

1. In `main.adb` right-click on `Time_Step`

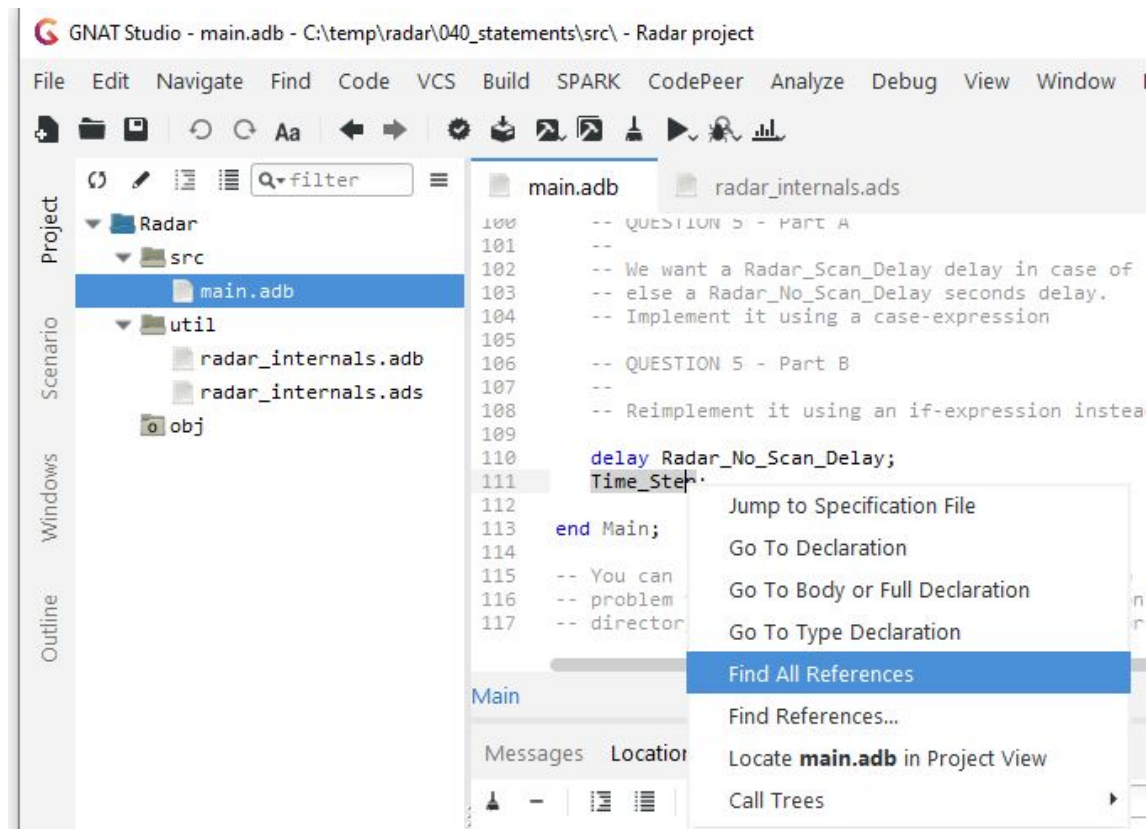


2. To examine the code for `Time_Step` you can:

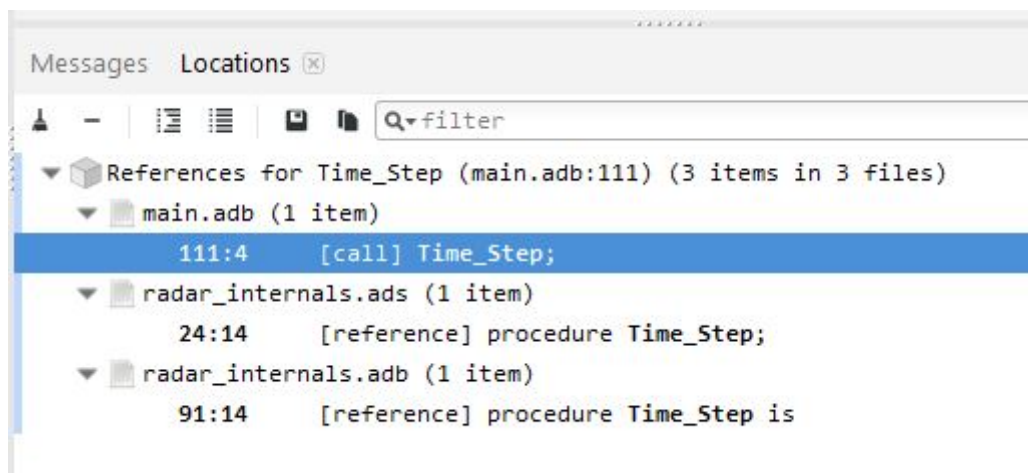
- Click `Go To Declaration` to look at the specification
- Click `Go To Body or Full Declaration` to look at the implementation

### Finding References

1. In `main.adb` right-click on `Time_Step`



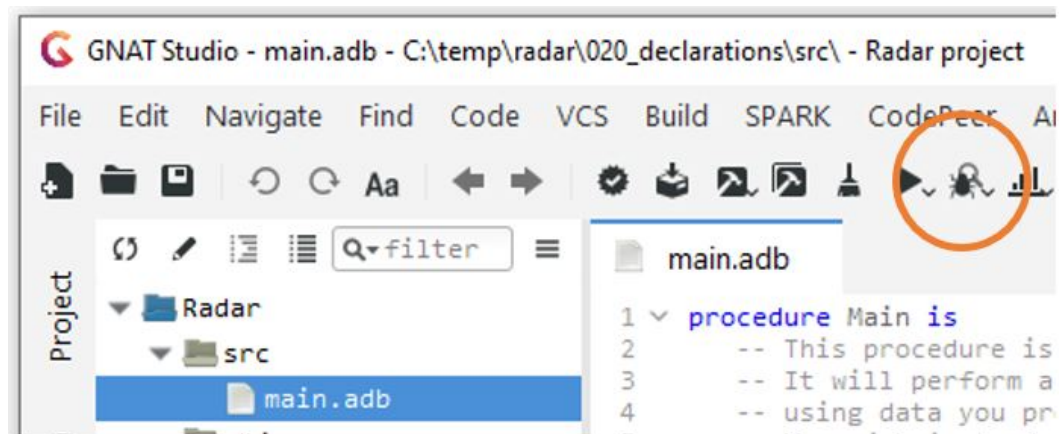
2. Select Find All References to see a listing of all uses for the object



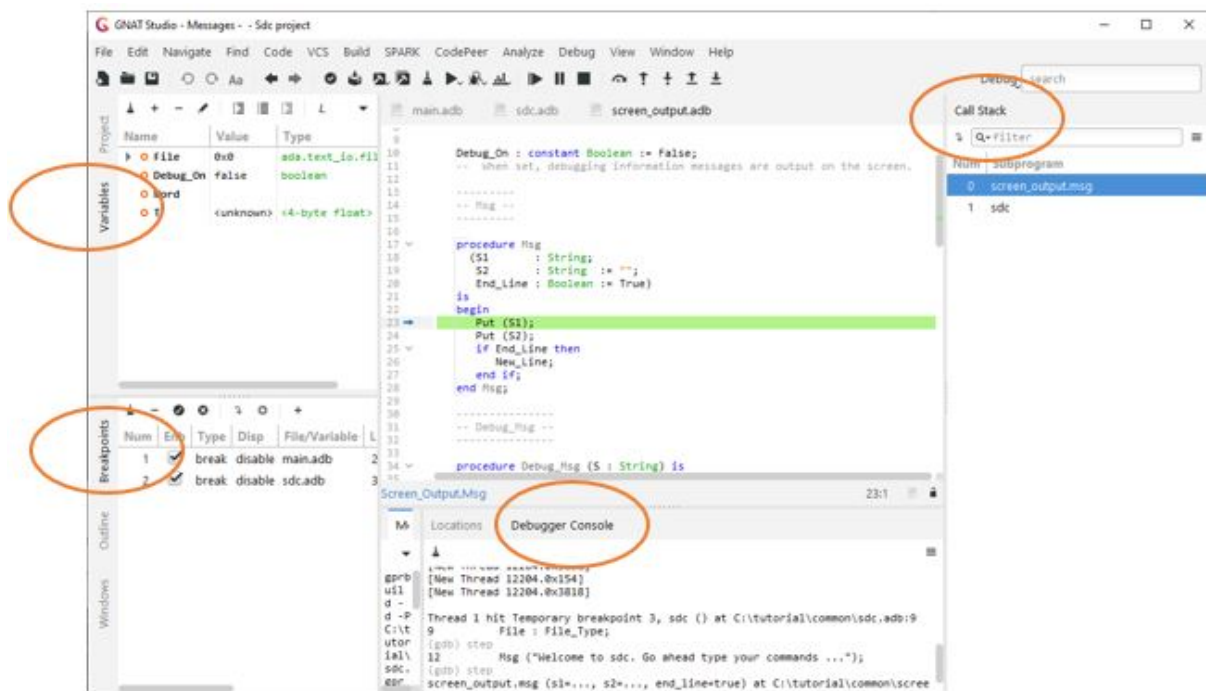
## Debugging with GNAT Studio

### 1. Start the Debugger

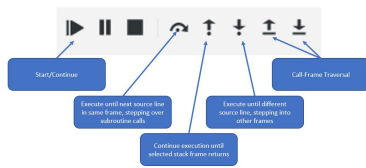
Click on the Build and Debug icon



GNAT Studio will go into debugging perspective, which you can see because a few more views have popped up.



Eight new buttons are added to the toolbar, allowing for precise debugging actions.

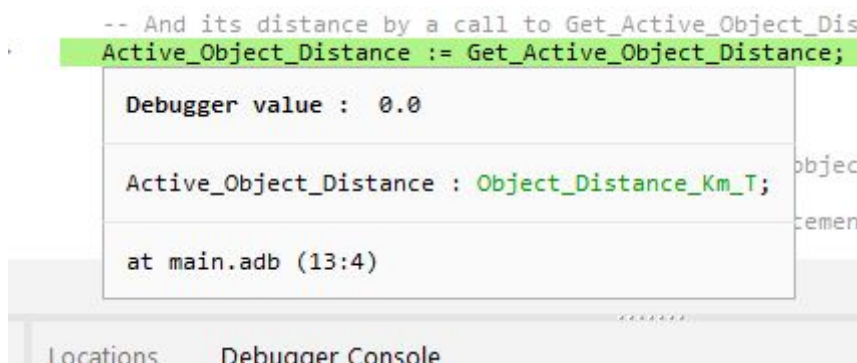


## 2. Set a Breakpoint

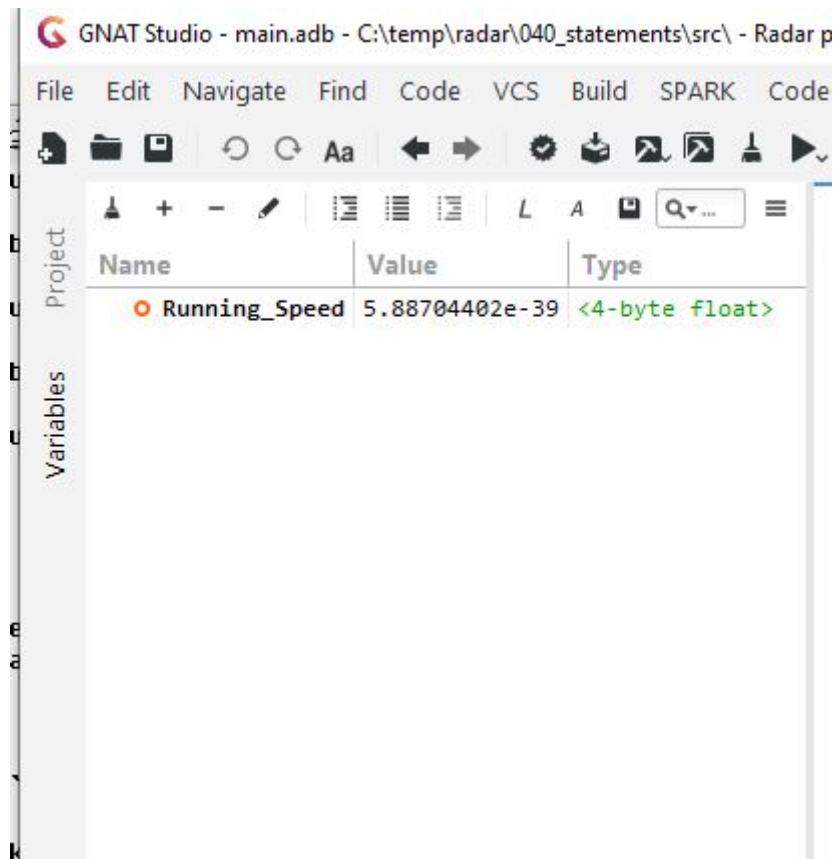
- Open source file `main.adb` and select an executable line
- Right-click and select `Debug → Continue until line <>`
  - Temporary breakpoint will be set, but *Debugger Console* states "The program is not being run"
- In toolbar, click `Debug Continue` icon
  - Run/Start** dialog will appear - make sure *Stop at beginning of main subprogram* is selected, then press OK
  - Execution halts at first line of executable code
- Click `Debug Continue` button again
  - Execution halts at line you previously selected
- Practice clicking the remaining navigation buttons

## 3. Examining Data

- While execution is stopped, hover over any variable to see its value and other information



- To monitor a data object during execution, you can add it to the **Variables** window
  - Right-click the object and select `Debug → Display <>` in `Variables` view



## Questions

- We want to implement the following Finite State Machine



- Follow the instruction in the source file