Western Washington University
Computer Science Department

CSCI 141 Computer Programming I
Fall 2011

Laboratory Exercise 1

Objectives

1. Gain familiarity with the software development environment.

Submitting Your Work

Save your program as WnnnnnnnnLab1.adb (where Wnnnnnnnn is your WWU W-number) and submit the file via the **Lab Exercise 1 Submission** item on the course web site. You must submit your program by 4:00pm on Friday September 30.

Exercise Steps

1. Check that your computer is running the Windows operating system. If it is currently running Linux, restart the computer and select the Windows operating system from the GRUB menu.

2. Log onto the computer, using the user name and password specified on the supplied sheet.

3. Windows will require you to change your password. Choose a new password containing at least 8 characters, including both upper-case and lower-case letters, digits and some punctuation.

4. Open an editor in Windows. Notebook++ is a good one to start with.

5. Type in the Ada hello world program:

```
with Ada.Text_IO;
procedure hello is
begin
    Ada.Text_IO.Put("Hello world!");
    Ada.Text_IO.New_Line;
end hello;
```

6. Save the file in your file space on the N drive as hello.adb.

7. From the Start menu, choose **All Programs,** then choose the **Accessories** folder and choose the **Command Prompt** to open a console window.

8. In the cmd.exe window, type:
   ```
   N:
   ```
   to switch to the N drive. If necessary, use the cd command to navigate to the directory where you saved the Ada program.

9. In the cmd.exe window, type the command to compile the Ada program:
   ```
   gcc-4.4 -c hello.adb
   ```

10. Type the command
    ```
    dir
    ```
    to see the files in your directory. You should now see the files hello.ali and hello.o in the same directory. The file hello.ali is the Ada Library Information file, containing information about the program for the binder and linker, and hello.o is the object file, containing the machine code translation of your program.

11. Now you can run the binder, with the command:
    ```
    gnatbind hello
    ```
    If you use the dir command again you should now see the files b~hello.ads and b~hello.adb.

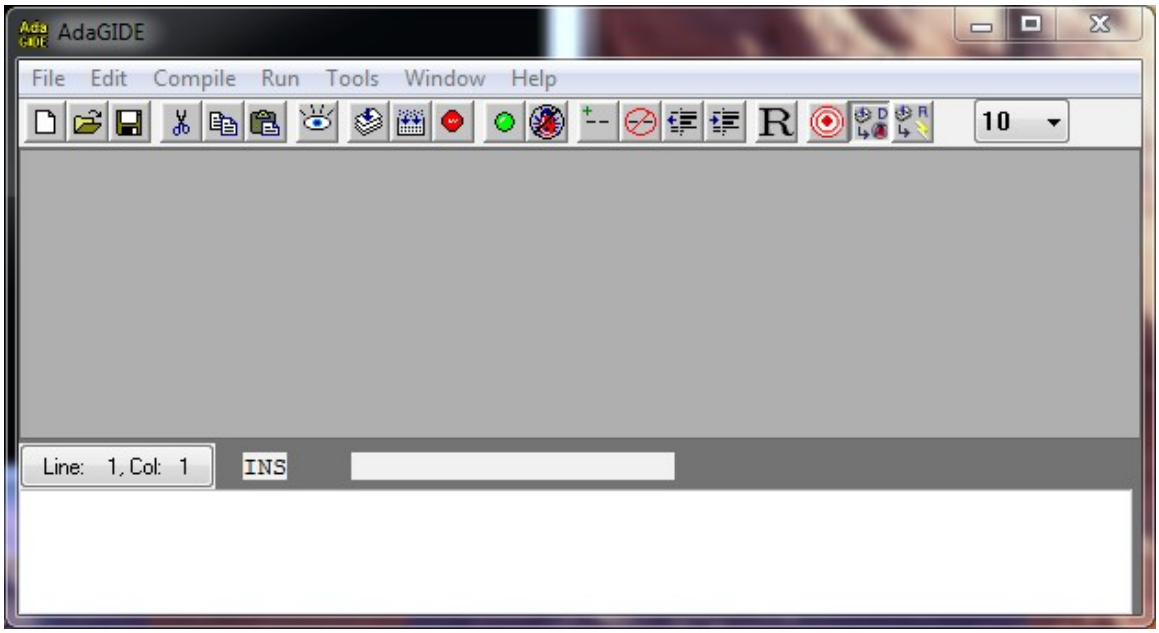
12. Now run the linker, with the command:
    ```
    gnatlink hello
    ```
    This will produce the executable file hello.exe.

13. Run the executable file simply by typing the command:
    ```
    hello
    ```
    The program should output one line
    Hello world!

14. Now delete everything except hello.adb, using the command:
    ```
    del *.o *.ali *.exe
    ```

15. Compile, bind and link the program in one step by using the command:
    ```
    gnatmake hello.adb
    ```
    This should produce the executable file hello.exe again. Run it to make sure that it works.

16. From the Start menu, locate and select the AdaGIDE program. This is a graphical Integrated Development Environment for Ada.



17. Create a new (empty) program in AdaGIDE – Select **New** from the **File** menu or press the Control key at the same time as the N key, or click the leftmost button  on the toolbar.

18. Copy your program from Notepad++ and paste it into the AdaGIDE window.

19. Compile the program by clicking on the **Compile** button  .

20. Run the program by clicking the **Run** button  .

Switching to Linux

21. Restart the computer and this time select Linux from the GRUB menu.

22. In order to see the files saved from Windows on the N drive, you need to connect to that server:

    Click on the **Places** menu (near the top left corner of the screen) and select the menu item **Connect to Server ...**.

    For **Service type**, select **Windows share**.

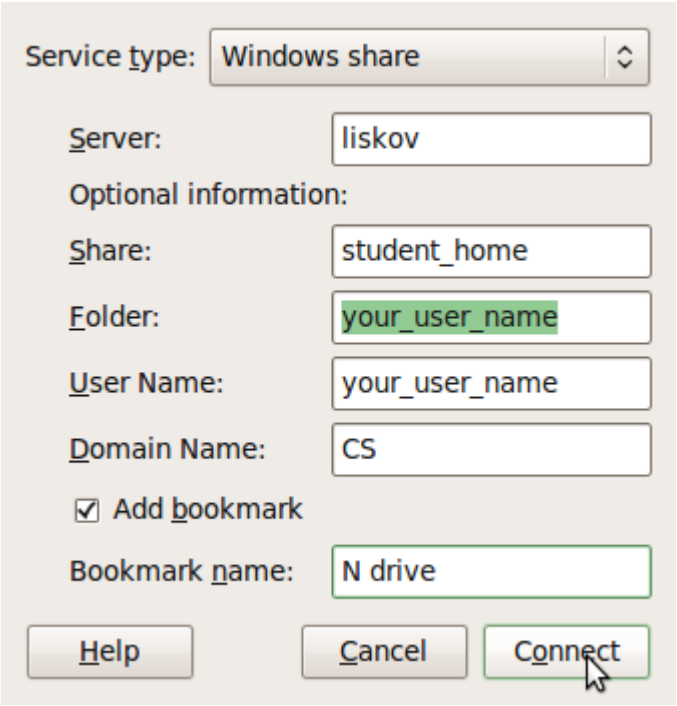
    For **Server**, type Liskov

    For **Share**, type student_home

For both **Folder** and **User Name**, type your login name.

For **Domain**, type CS

Click the **Add bookmark** check box and type in a **Bookmark name** (for example, N drive).



23. You will now be asked for your password. Click the option to remember it forever.

24. When the window opens, showing the windows files on your N drive, right-click with the mouse on the file hello.adb and select **Open with gedit**.

25. Make some changes – go on, add some more comments! Check that the double quote characters look normal, not slanted (windows may have put some strange characters in there). If necessary, delete those double quote characters and type them in again.

26. Save the file in your Linux home directory (it has the same name as your user login name), using the **Save As** command from the **File** menu.

27. From the **Applications** menu, find and select the **Terminal** program.

28. Follow the same instructions in steps 9 through 11 that you used for Windows.

    Instead of the windows **dir** command, Linux uses the command **ls** to list the files in your directory. Instead of the **del** command to delete files, Linux uses the command **rm**.

    You will notice that gnatlink does not produce a file hello.exe. Instead, the executable file is simply called hello.

29. To run the program under Linux, you need to type the command:

```
./hello
```

The ./ tells Linux to look for the file in the current directory.

30. Rename the file hello.adb as Wnnnnnnnn.abd (where Wnnnnnnnn is your W-number). You can do this from the command line using the mv command (move), for example:

```
mv hello.adb W00654321.adb
```

Submit your .adb file through the moodle web site.