ACSE Quick installation guide

Davide Savoldelli

February 24, 2020

1 Requirements

- Windows 10 build 14393 or above.

- The ACSE source code version 1.1.5 or above. This can be provided by your lecturer on the appropriate channels (e.g: BeeP).

- Microsoft Visual Studio Code

2 Installation of Windows Subsystem for Linux (WSL) and first setup

In order to provide a clean installation of the required binaries for the compiler to work, without the need to install a complete Virtual Machine on the System or to use the dual boot, the best option is to opt for the WSL. Windows Subsystem for Linux is a lightweight version of a Linux distro under Windows 10 environment. With it, the POSIX syscalls of the virtualized machine are on-the-fly translated into Windows NT system calls.

1. Press ⊞+R, type `powershell` and press Ctrl+⇧+Enter. Insert the Administrator password if prompted.

2. Type:

   ```
   Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Windows-Subsystem-Linux
   ```

   and press Enter. Reboot the computer if asked.

3. Go to the Microsoft Store Application and install a packaged Linux distro. Pengwin or Ubuntu are recommended. Once opened the previous installed Linux distro and waited the environment to set up, choose a UNIX username and a password.

4. Install the required packages:

   ```
   sudo apt update && sudo apt install gcc flex bison
   ```

5. In Windows, open Visual Studio Code and install the Remote - WSL extension. This will prevent you from installing `code` under Linux environment and allow to use the builtin Visual Studio Code's terminal.

6. Download the ACSE archive and unzip it into a handy Linux directory (for example `/home/acse_x.x.x`, where x.x.x is the version number).

   Note: in Windows you can use the builtin 9P Virtual Server to access Linux directories. Open Explorer and type `\\wsl$\<YOUR_DISTRO_NAME>` in the search bar (for example: `\\wsl$\Ubuntu`) and press Enter.

7. Open the Linux distro App, enter the command `nano ~/.bashrc` then add the follwing line to the file: `PATH=$PATH:<PATH_TO_ACSE_FOLDER>/bin` Press Ctrl + X , type Y and press Enter to save.

8. Enter the command `source ~/.bashrc` to reload the shell with the new environment variable.

3 Usage

1. Open the Linux distro App and use `cd` to select the inner acse folder (`cd acse_x.x.x/acse`).

2. Type `code Acse.lex Acse.y` to edit your language functionalities. This will open a new Visual Studio Code window under the Linux context. The output of the builtin Terminal emulator will be from Linux's `bash` and no longer from `cmd`.

3. When finished coding, move to the acse root folder (`acse_x.x.x`) and enter the `make` command.

   Note: this is required *every time* the source files (including `Acse.lex` and `Acse.y`) are modified, since `acse` binary must be recompiled.

4 Testing

To test the compiler, it is suggested to follow the next steps:

1. Create a folder into `acse_x.x.x/tests`, create a `.src` file (containing the source code of the language to test) and place it into that folder.

2. Add the name of the folder to the `dirs` variable into the `tests/Makefile`.

3. Run `make` to compile sources. This is required every time a source file modification occurs.

   Note: after *every build* remember to leave only the `*.src` file into the folder and delete everything else. Otherwise `make` will skip that folder.