uberSpark Documentation

Release Version: 5.0; Release Series: Chase

https://uberspark.org

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CONTENTS:

Described below are details on the software requirements and dependencies, build, verification and intallation of the uberSpark core libraries and hardware model

CHAPTER

ONE

SOFTWARE REQUIREMENTS AND DEPENDENCIES

We assume your are working in: `/home/<home-dir>/<work-dir>`

Replace `<home-dir>` with your home-directory name and `<work-dir>` with any working directory of your choice.

1.1 Development OS and Base Packages

You will need a working Ubuntu 16.04.x LTS 64-bit environment for development and verification. This can either be a Virtual Machine (VM) (e.g., VirtualBox) or a container (e.g., Windows WSL). As of this writing, the Ubuntu 16.04.x LTS VM ISO image is available at:

```
http://releases.ubuntu.com/16.04/ubuntu-16.04.6-desktop-amd64.iso
```

You will need to first perform an `update` to download the latest package lists from the repositories as shown below:

```
sudo apt-get update
```

After the update completes, you will need to install the following base packages required for development as shown below:

```
sudo apt-get install git gcc binutils autoconf
sudo apt-get install lib32z1 lib32ncurses5 lib32bz2-1.0 gcc-multilib
sudo apt-get install ocaml ocaml-findlib ocaml-native-compilers
sudo apt-get install graphviz libzarith-ocaml-dev libfindlib-ocaml-dev
sudo apt-get install make unzip
```

1.2 OCaml Compiler and Base Packages

You will then need to install the OCaml Package manager as shown below:

```
wget https://raw.github.com/ocaml/opam/master/shell/opam\_installer.sh -O - \| sh -s /
↪usr/local/bin
```

After the OCaml Package Manager installs successfully, configure the opam environment and switch to the appropriate OCaml compiler version as shown below:

```
eval ``opam config env``
opam switch 4.02.3
```

After the opam environment switch, install the following opam packages in order:

```
opam install menhir.20170712
opam install ocamlgraph.1.8.7
opam install ocamlfind.1.7.3
opam install zarith
opam install yojson
```

- coq proof assistant (8.6.1) {% highlight bash %} opam install coq.8.6.1 {% endhighlight %}
- Compcert (3.0.1) {% highlight bash %} wget http://compcert.inria.fr/release/compcert-3.1.tgz tar -xvzf compcert-3.1.tgz cd CompCert-3.1 ./configure x86_32-linux make all sudo make install cd .. {% endhighlight %}
- Frama-C (version Phosphorus-20170501) {% highlight bash %} wget http://frama-c.com/download/frama-c-Phosphorus-20170501.tar.gz tar -xvzf frama-c-Phosphorus-20170501.tar.gz cd frama-c-Phosphorus-20170501 ./configure make sudo make install cd .. {% endhighlight %}
- Install CVC3, Alt-Ergo and Z3 as backend theorem provers. The WP Frama-C plugin manual (available here) contains a chapter on installing the theorem provers. Note that you will need to install the correct versions of Why3 and the provers as described in the aforementioned Frama-C WP plugin manual (e.g., Why3 0.87.3 and Alt-ergo 1.30). This can be done via opam (e.g., `opam install why3.0.87.3`).

CHAPTER

TWO

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