CoreGen Portal Tutorial

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ver 2019.10.17

Tutorial Series

- Level 0: Introduction to System Architect

- Level 1: System Architect Design Concepts and Developing a basic RISC processor

- Level 2: Instruction-Level (StoneCutter) Implementation Concepts

- Level 3: Advanced Design Concepts

- Level 4: System Architect Plugins and Integrating External RTL

- **CoreGenPortal Tutorial**

System Architect Using the CoreGen Portal

Modular, High-Level Design Concepts

Installation

- The CoreGen Portal can be installed from source code or from pre-built binaries.

- Source Code:
  - First install CoreGen from https://github.com/opensocsysarch/CoreGen
  - Next install CGPortal from https://github.com/opensocsysarch/CoreGenPortal

- Pre-Built Binaries
  - Binaries for your platform can be found in the system architect release repo https://github.com/opensocsysarch/SystemArchitectRelease/tree/master/CoreGenPortal/x86_64

Running the portal

Once you have installed the Portal it can be run from the command line with the commit '$ CoreGenPortal'. The window to the right should appear.
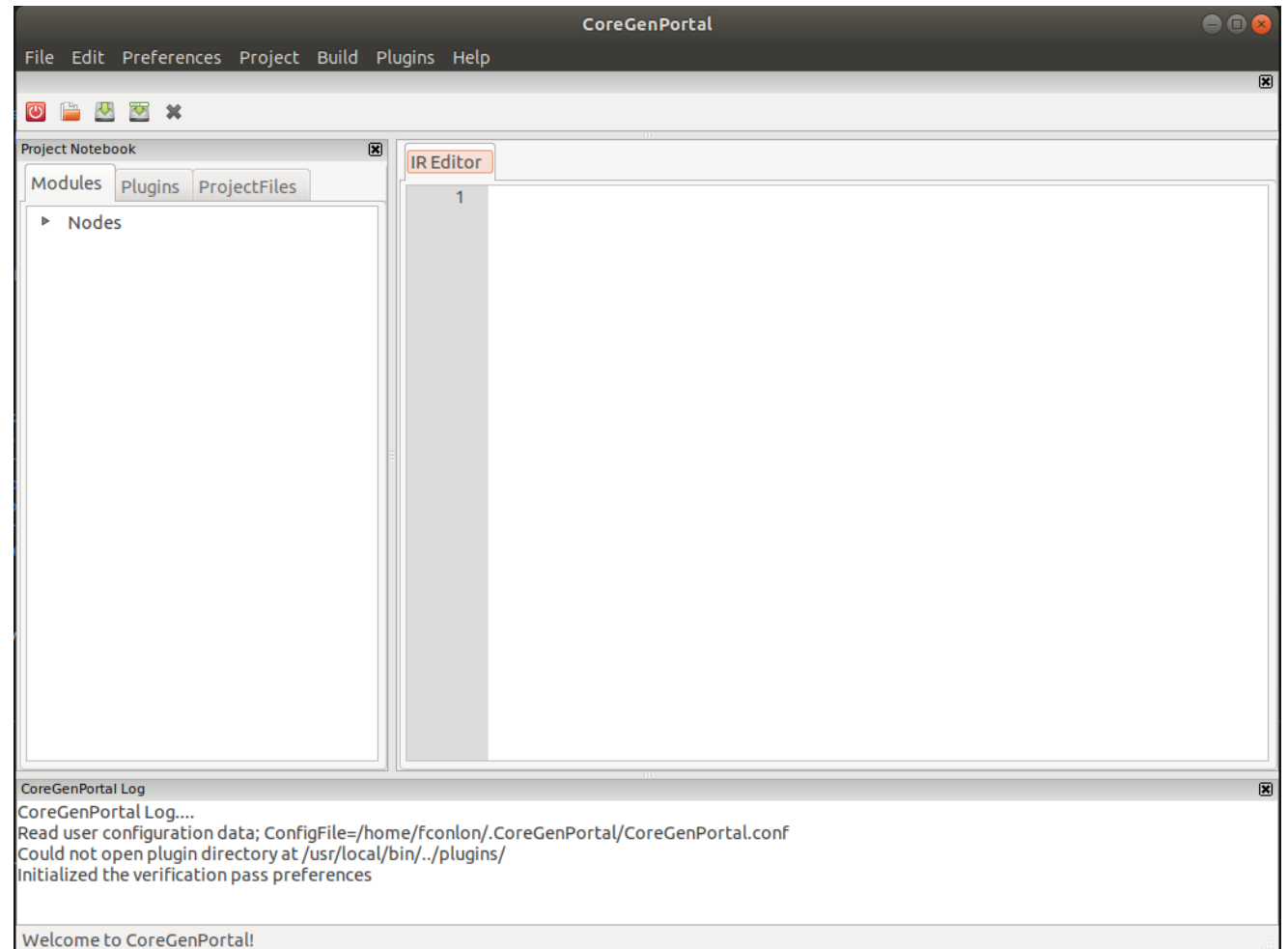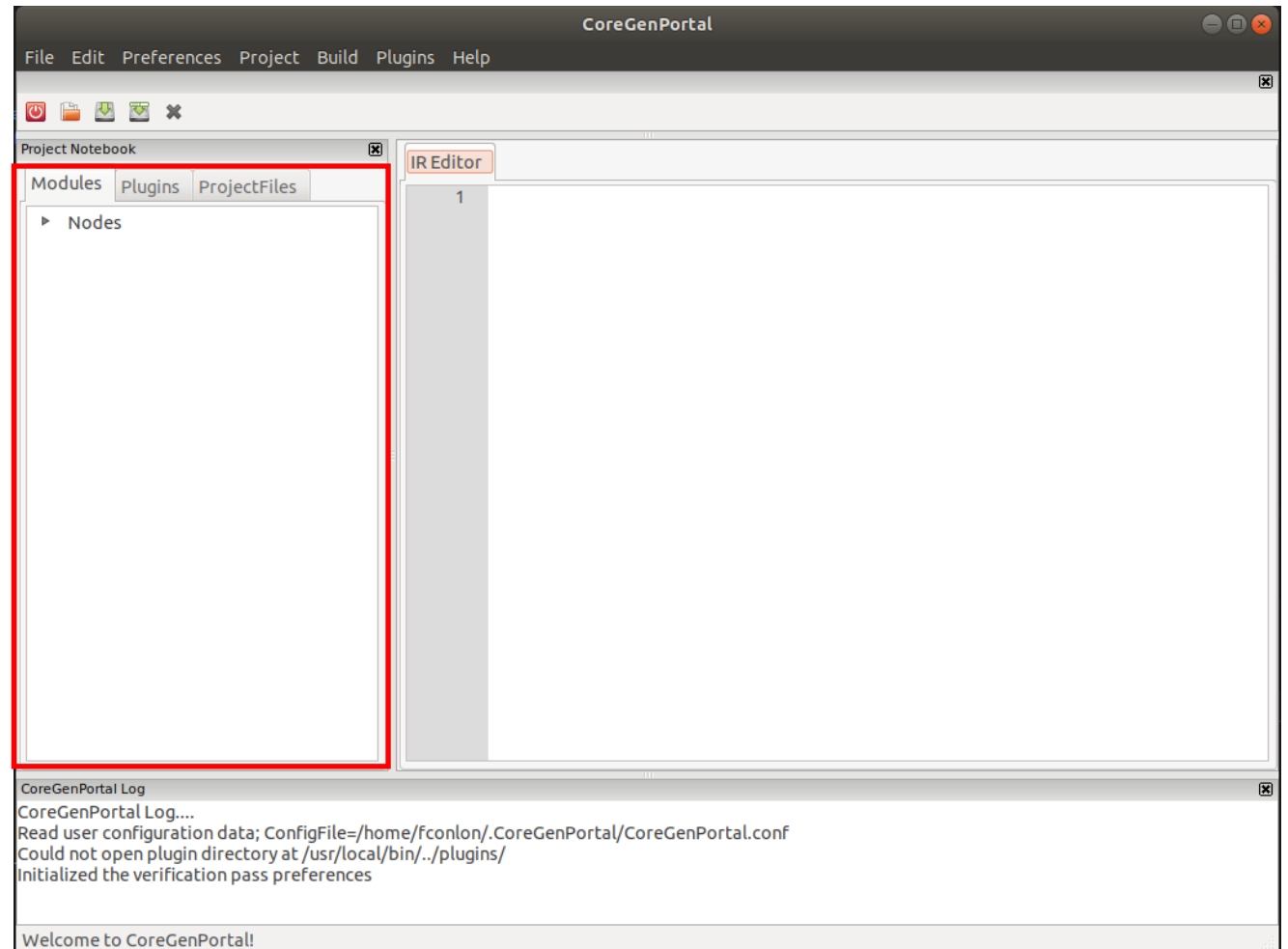
Parts of the Portal: Node Tree

The Node Tree will display all of the Nodes in your IR.

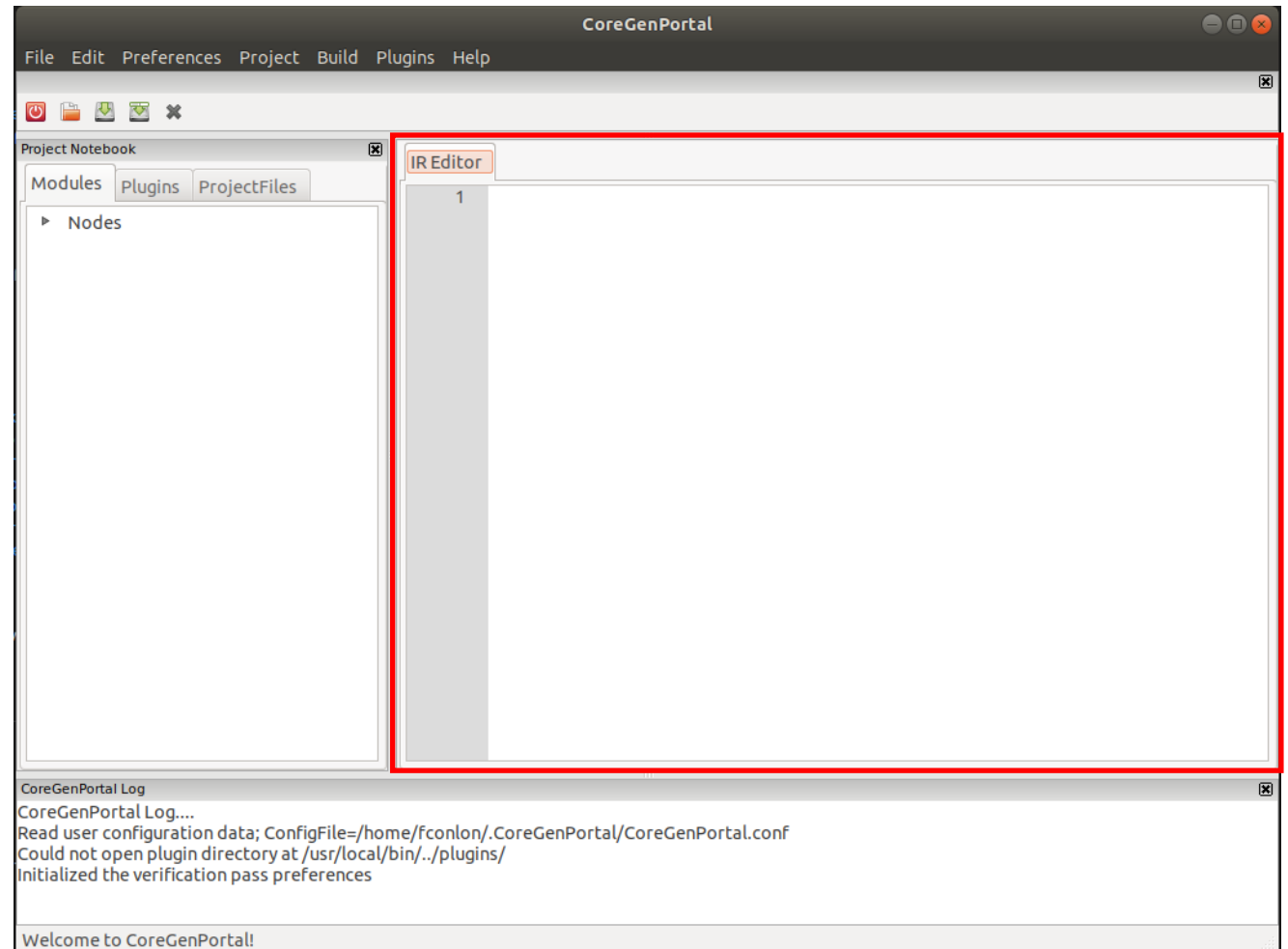The tree can be expanded to show a list of the types of nodes.

The tree will allow you to create new nodes and edit existing nodes

Parts of the Portal: Edit Window
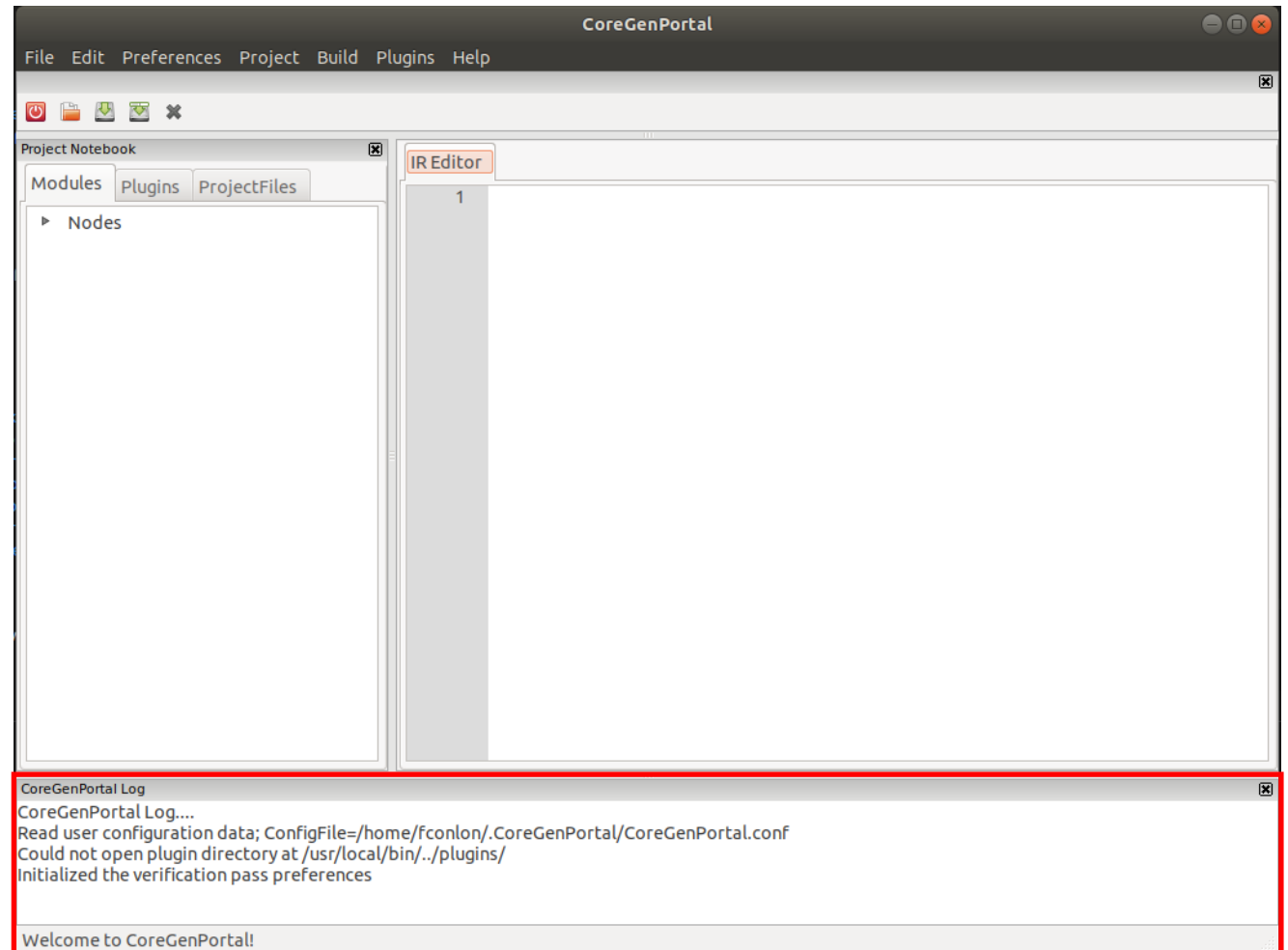
The Edit window will display your IR and SC files.

You IR and SC files can be manually edited and saved using the Edit Window

Parts of the Portal: Log Pane

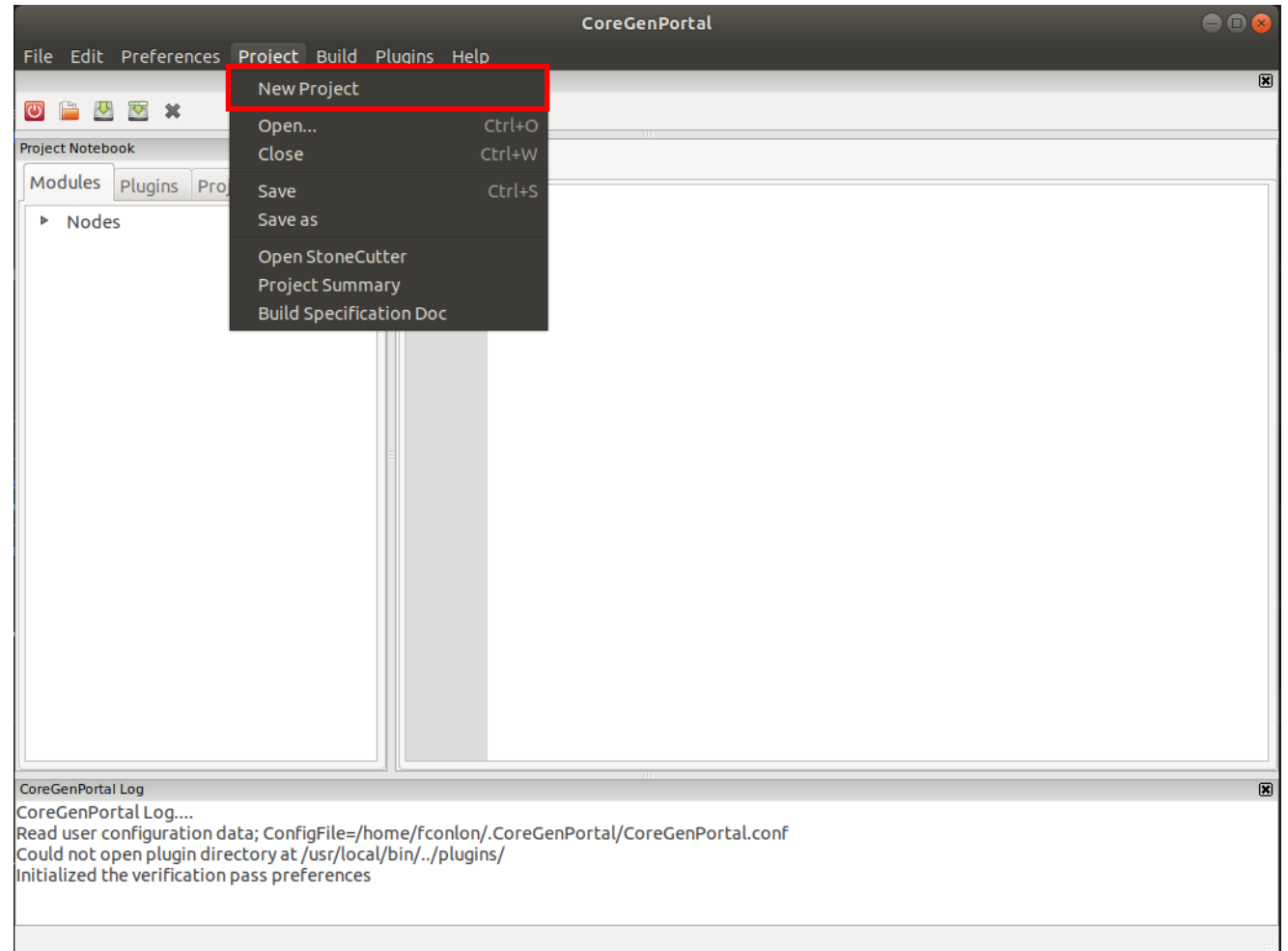The Log Pane will display error warning and progress messages

These messages provide information about errors or things that could cause errors

Starting a New Project
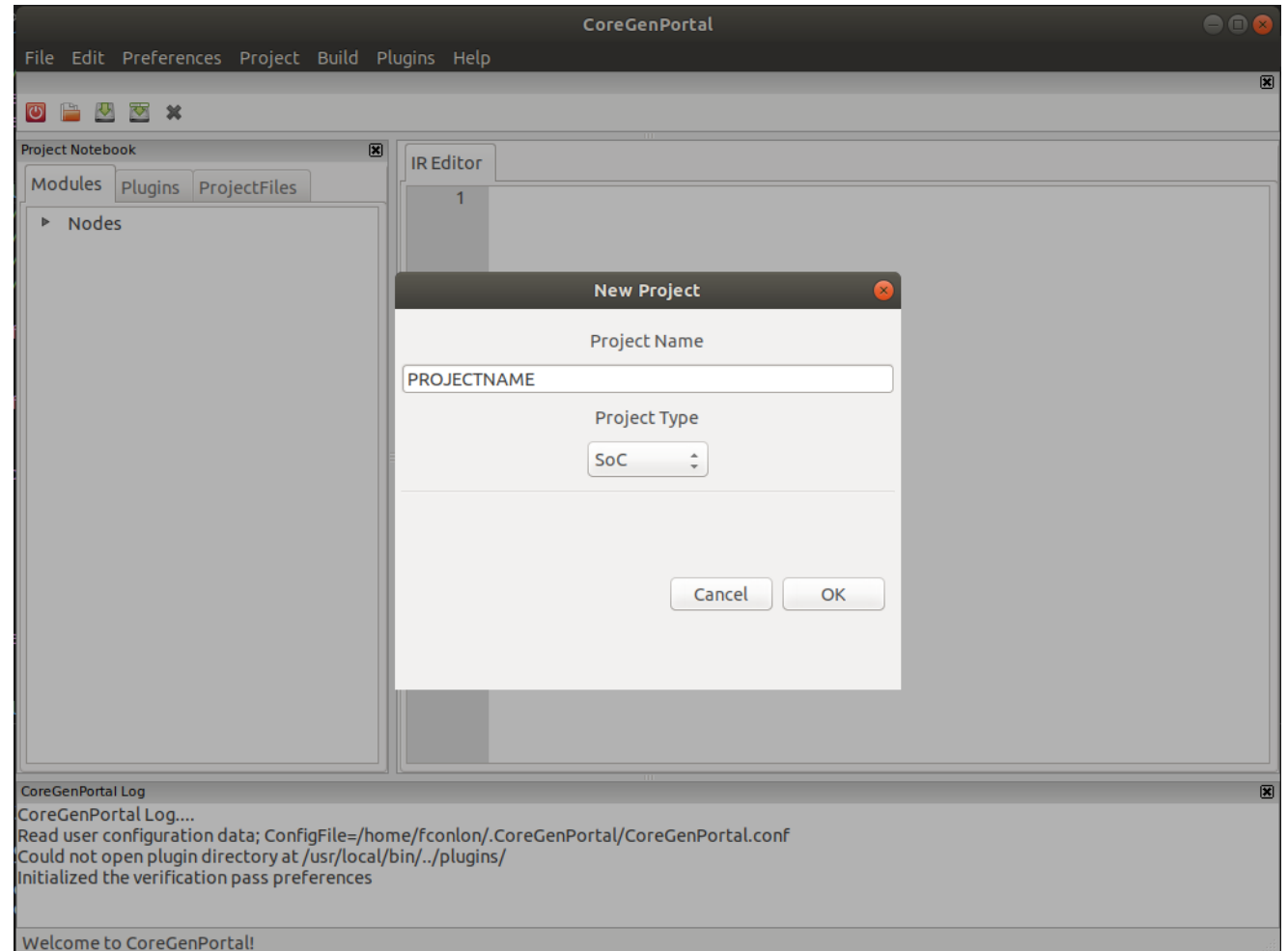
Click the Project tab and select new project

This will open a create Project dialogue

Starting a New Project

The New Project dialogue will allow you to create the name and select the type (SoC, Module Extension, UNK) of the project
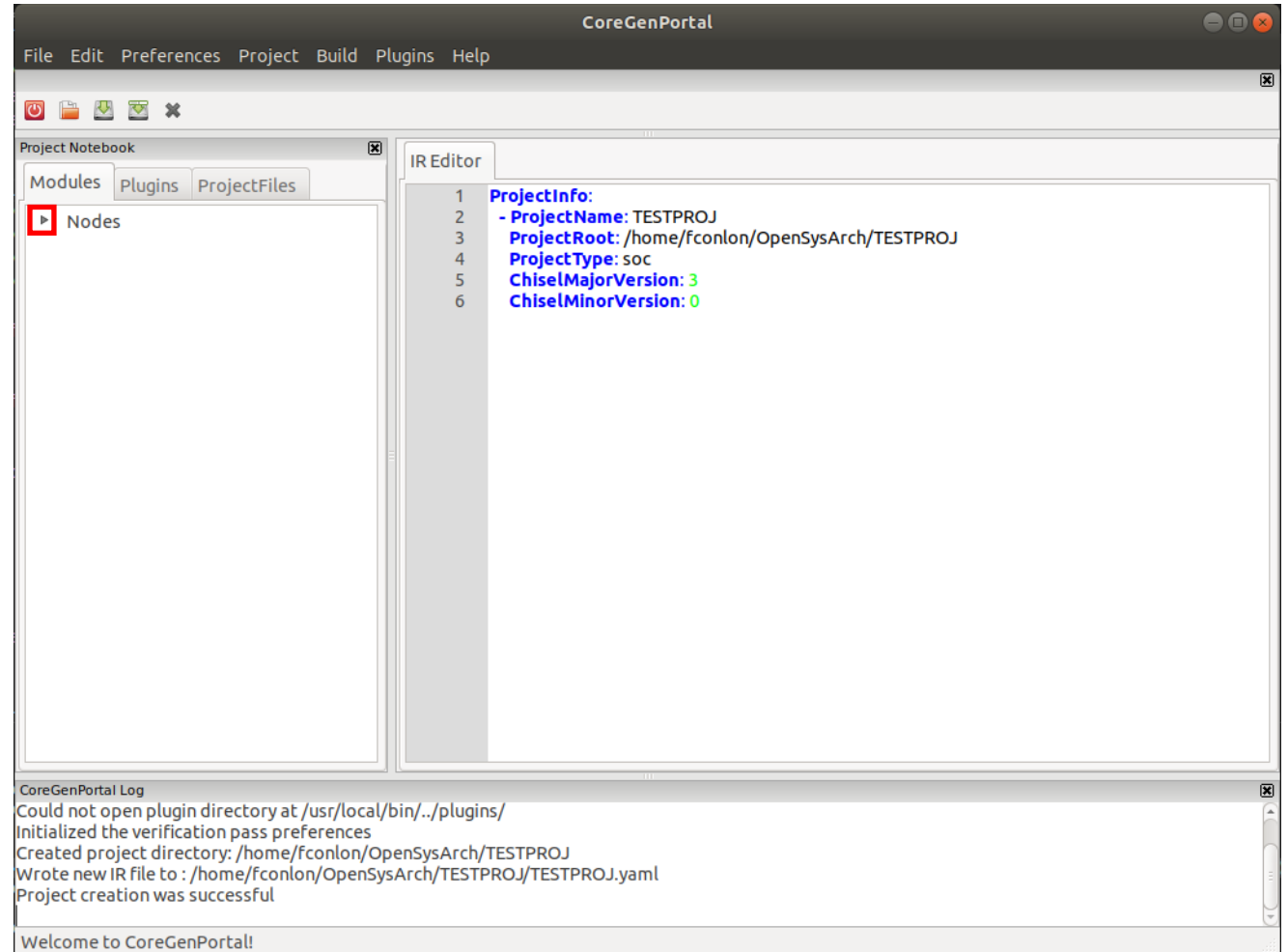
Give the project a name, select SoC and click OK

Adding a Node
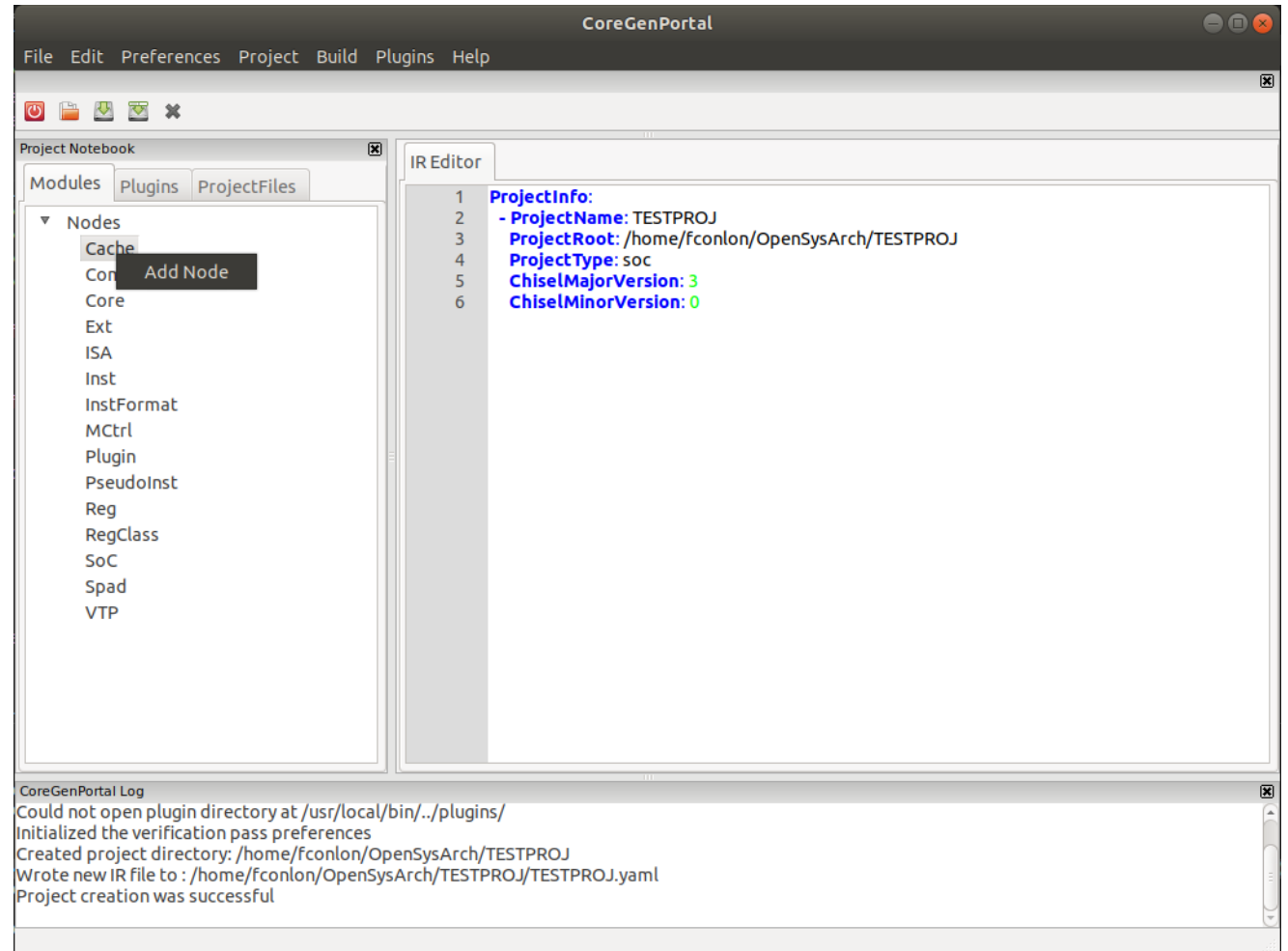
A new Project with an IR shell will

Click the arrow next to "Nodes" in the Node tree to show a list of types of nodes

Adding a Node

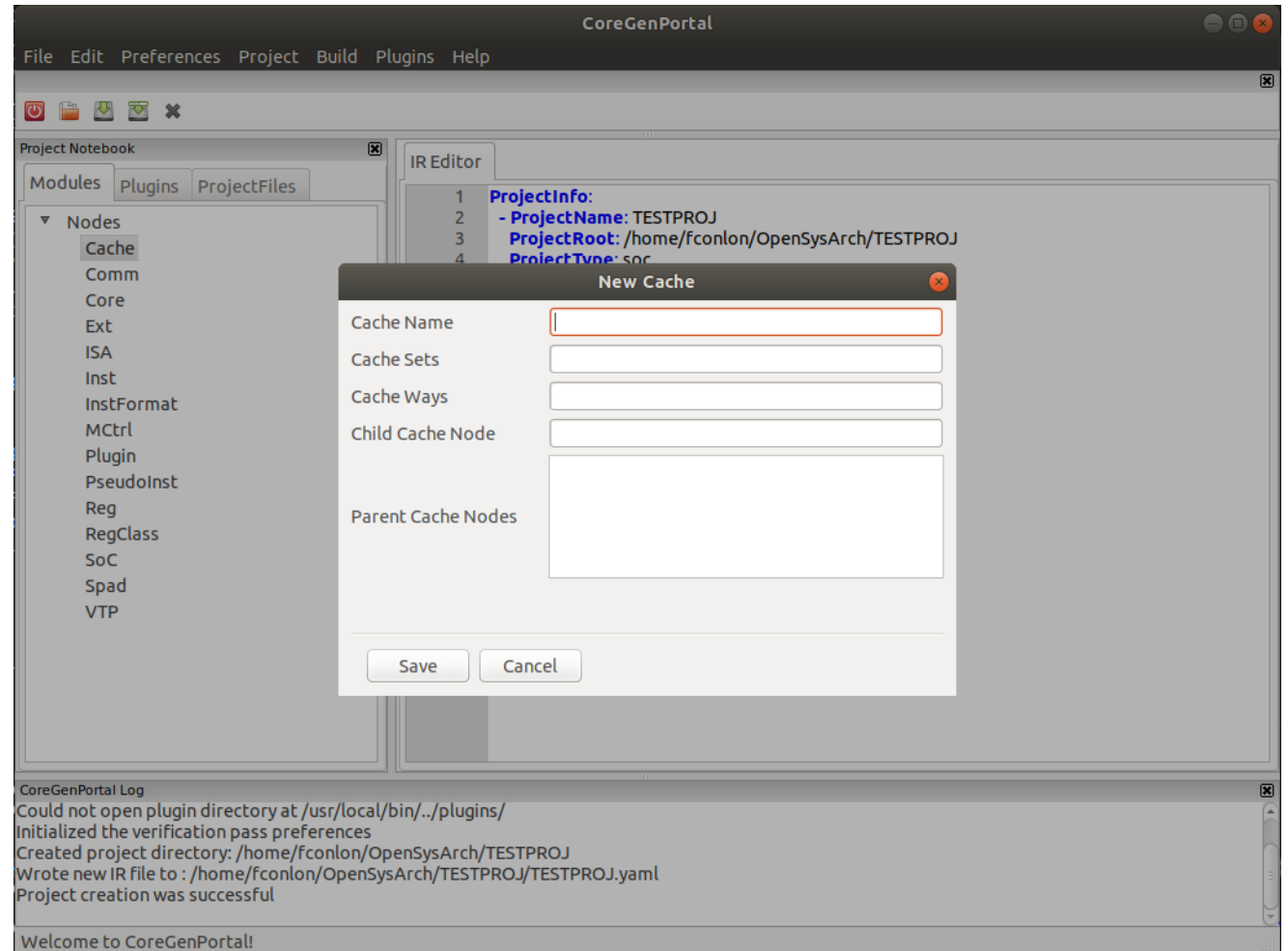Clicking the Nodes dropdown arrow will display a list of the types of nodes that can be created.

Right click a type of node and click Add Node to bring up an Add Node dialogue

Adding a Node

Clicking Add Node will display a dialogue box with all of the relevant fields for the node type you are trying to create

Try clicking save with all of the fields empty

Adding a Node

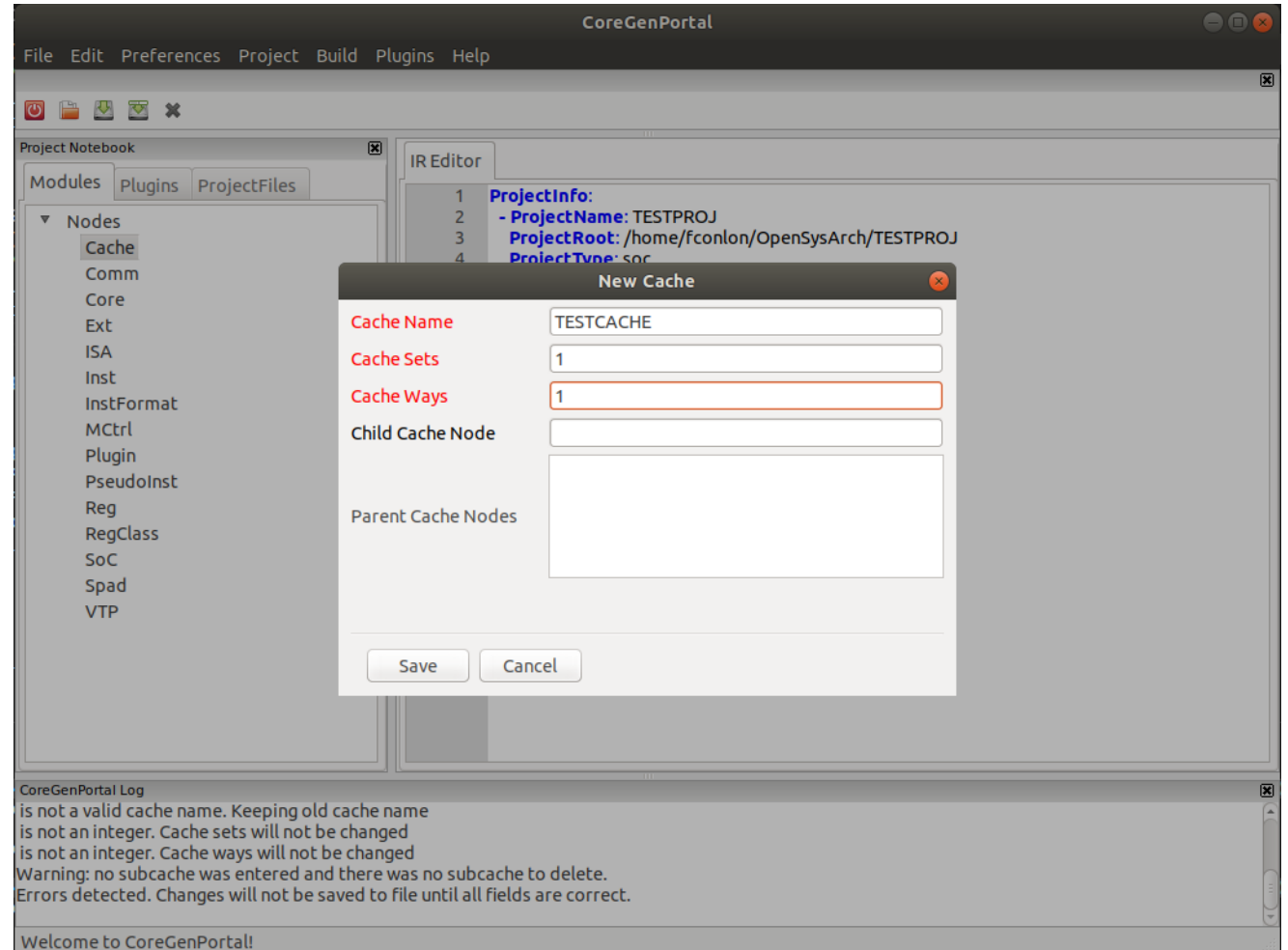Clicking save with errors in the save box will highlight the fields that have errors with red

Notice that the Log Pane displays error messages that describe what is wrong with each highlighted box
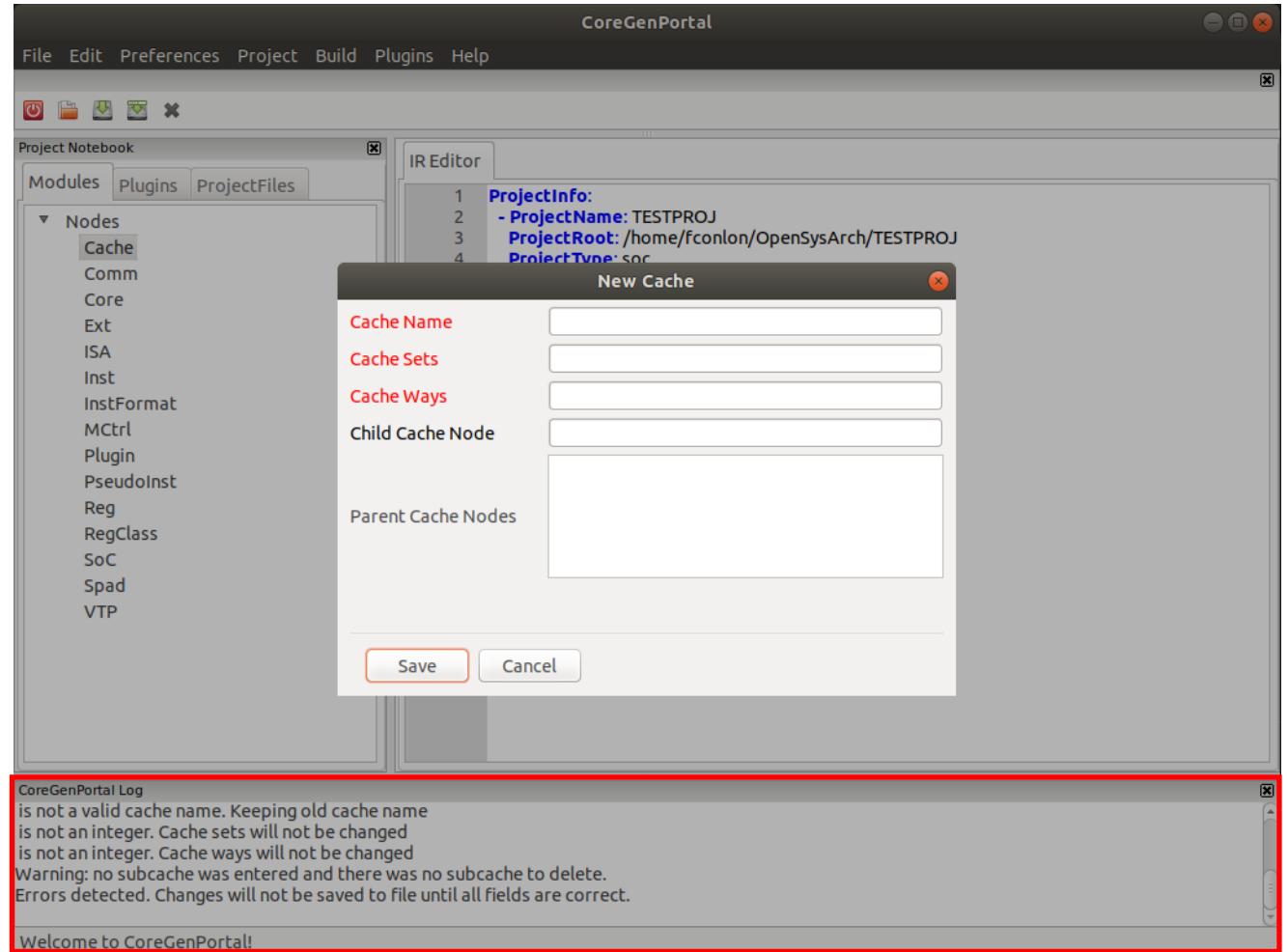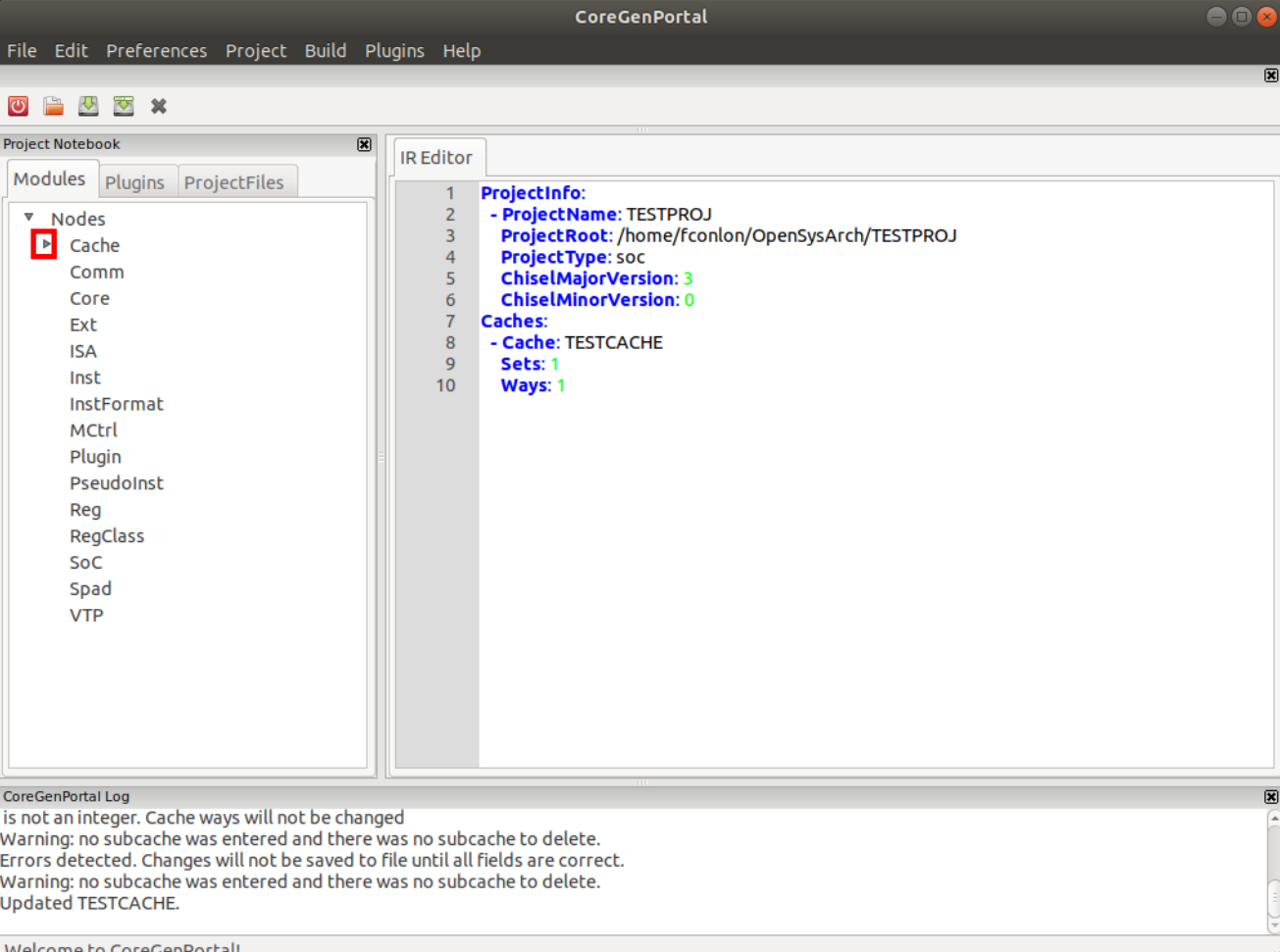
Adding a Node

Enter Cache information into the required boxes and click save

This will write the node to the yaml and add it to the Node Tree

Editing a Node

With a node added you can click on the arrow next to the node type to view all the nodes of that type
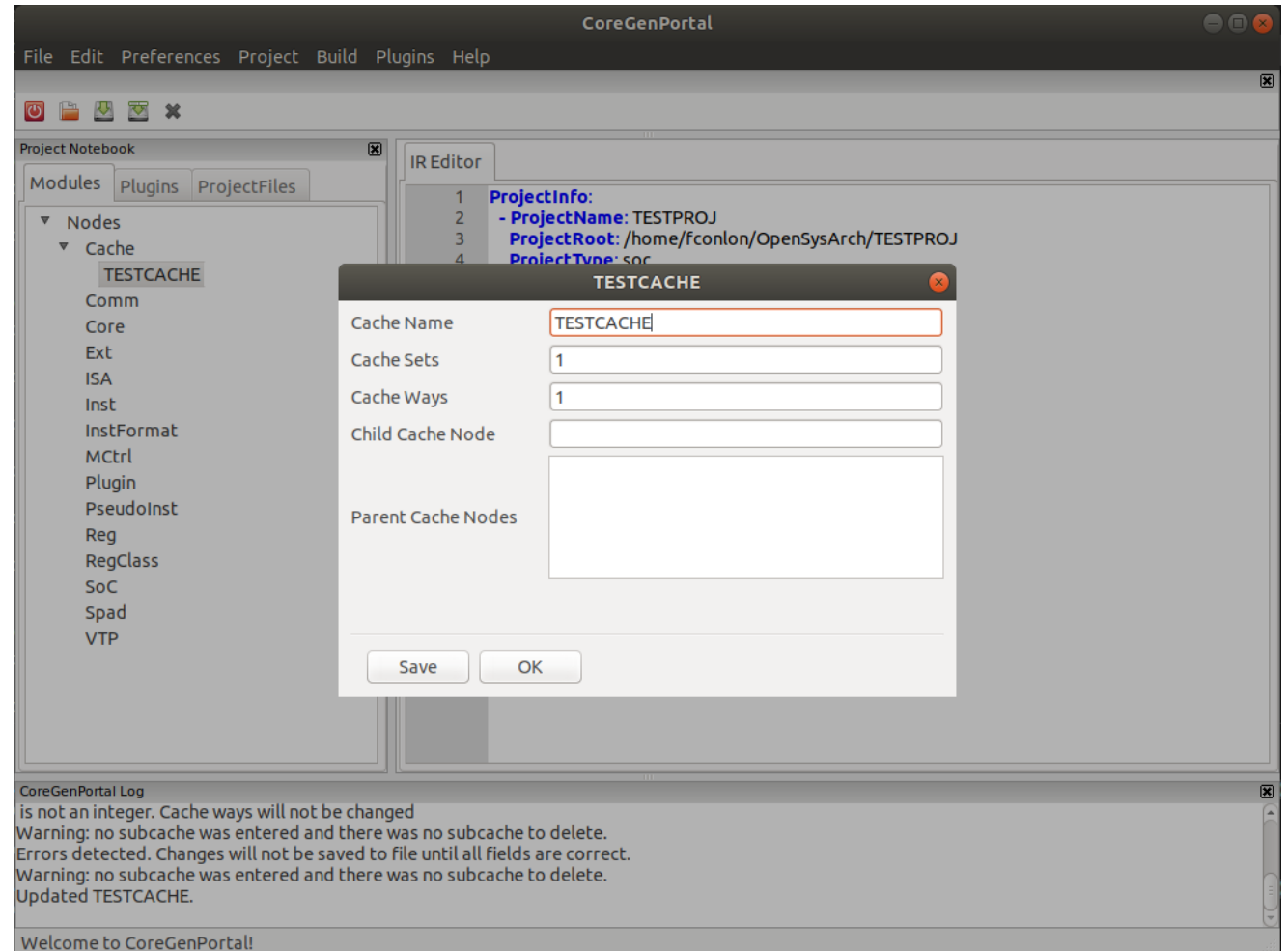
Editing a Node

With the Cache Nodes Tree open, right click the cache that we just created and Select Node Info. This will open a dialogue with editable node information
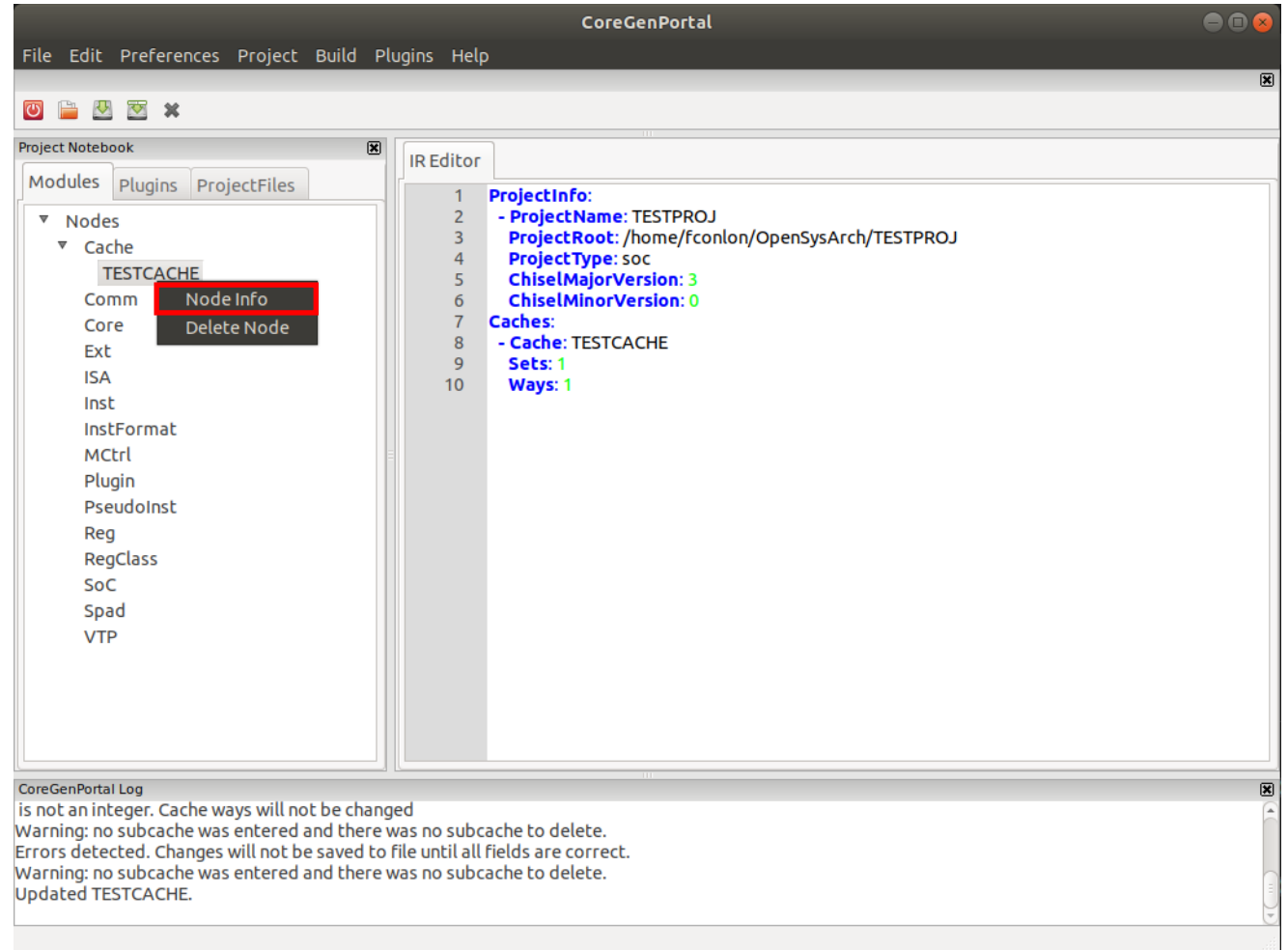
Editing a Node

The Node Info window contains several editable text boxes that display information about the Node

Try entering a non-integer into the sets or ways box and clicking save

Editing a Node

Just as with the Add Node window, any boxes with invalid information will be highlighted red and an error message describing what is wrong will be added to the Log Pane

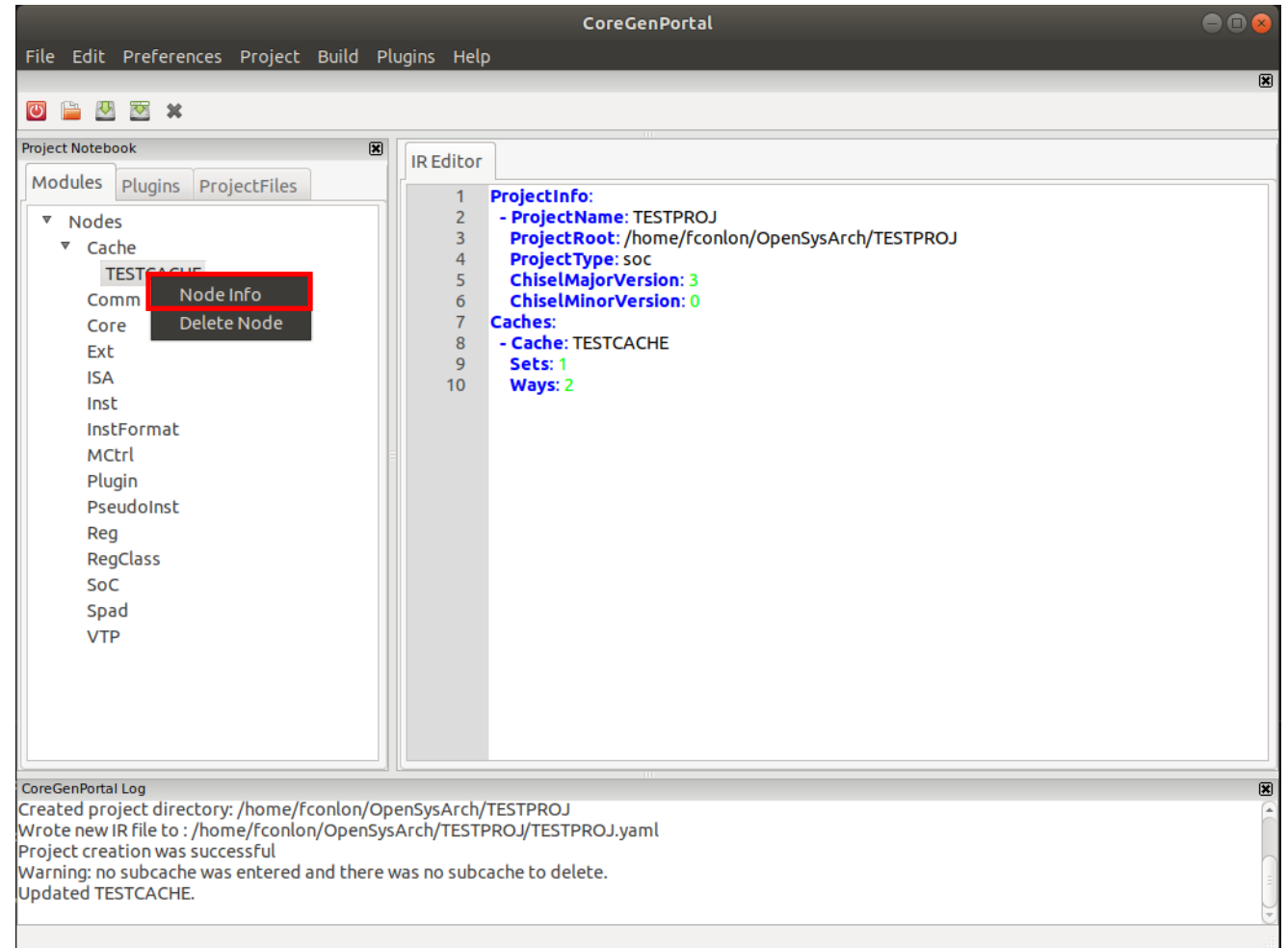Change the non-integer to a new integer and click save
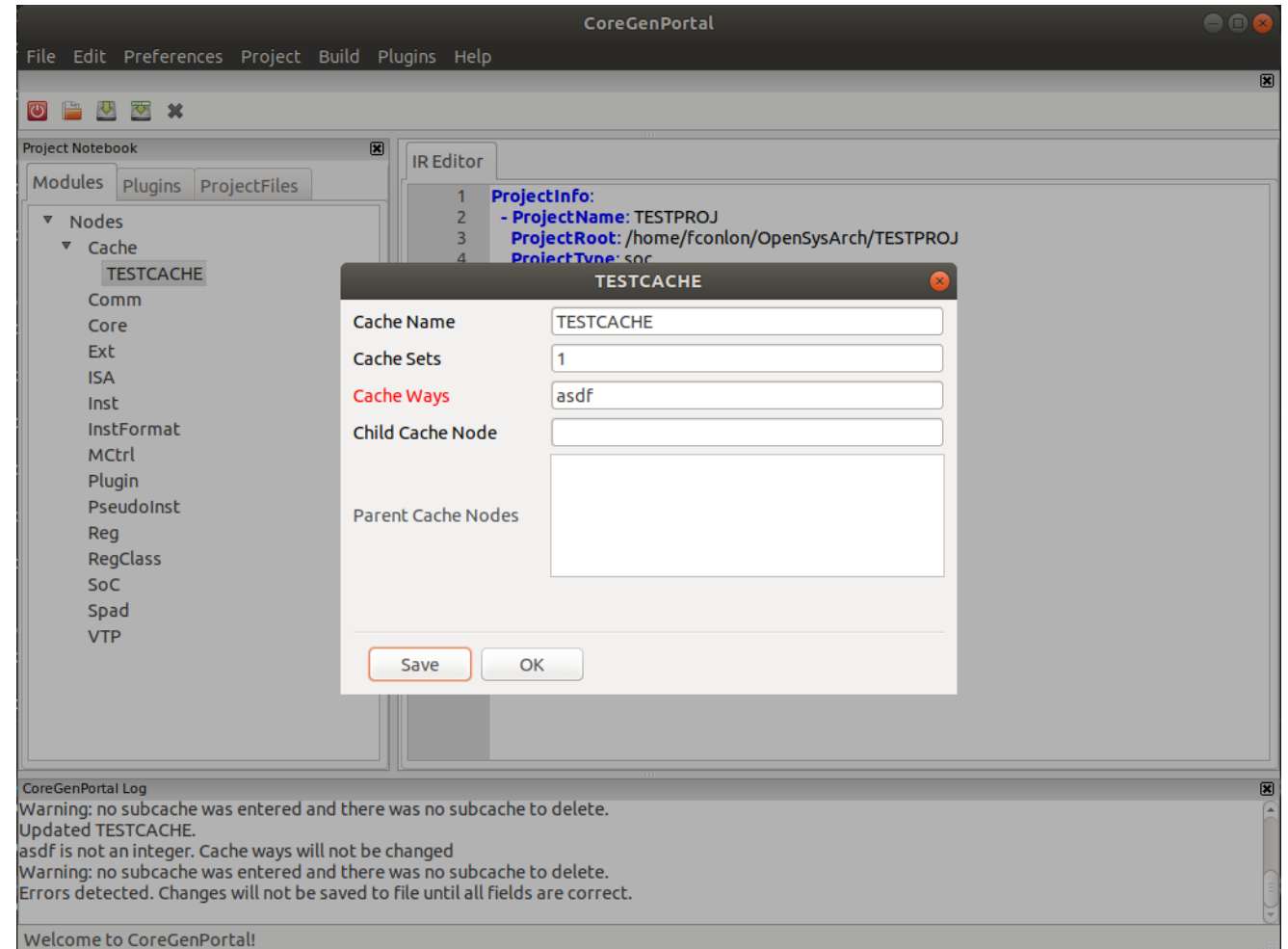
Editing a Node

The Cache Node and IR will automatically be updated and saved when you click save with valid information in all fields
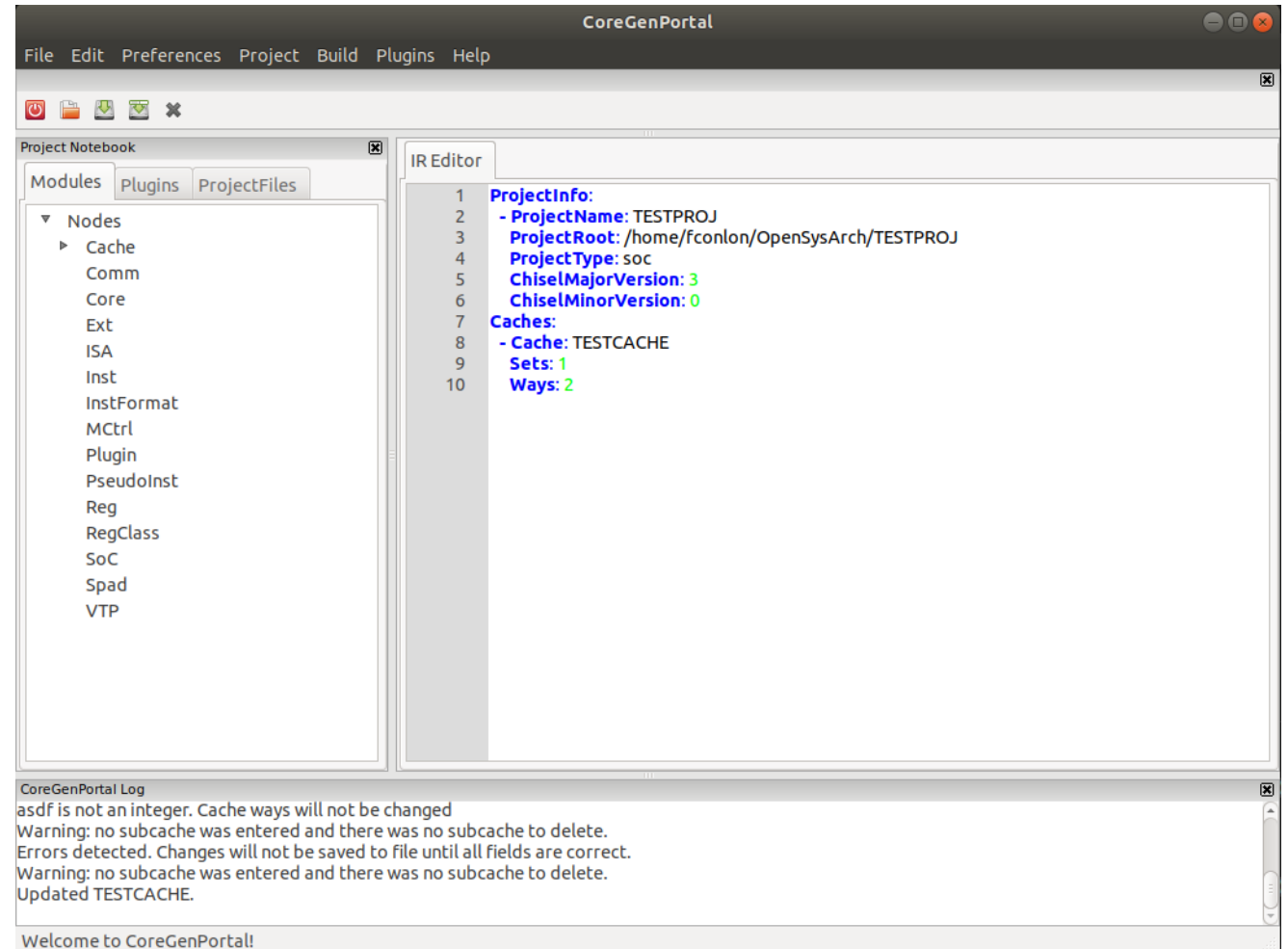
Deleting a Node

Navigate to the node that you would like to delete in the Node Tree then right click it

Select Delete Node from the popup that appears

Deleting a Node

The Node will be deleted from the tree and the yaml will be updated