Project Report: MorphCore

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Introduction

1.1 Project Overview

1.2 Project Goals

The MorphCore Architecture

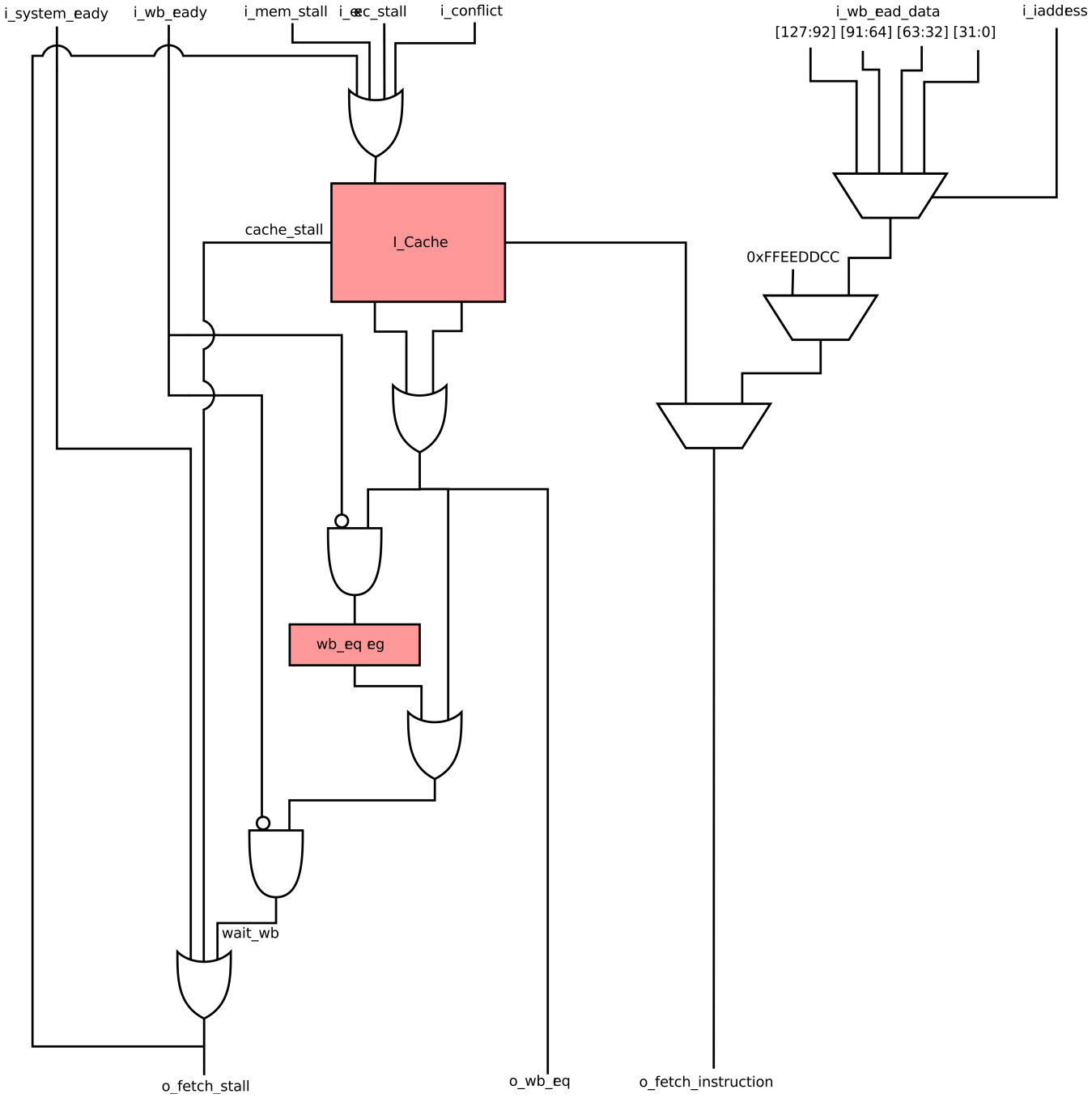
2.1 Amber 25 Core Architecture

We started out with an existing ARMv7 core implementation called Amber. The architecture of the Amber 25 core looks something like this:

2.2 Importing the Amber Project into Vivado

This was hard.

2.3 The MorphCore Architecture



Verification

3.1 Testing Strategy

Our testing strategy is divided into three major parts: Verilog testbenches, assembly tests, and the Linux boot test.

3.2 Automated Regression Testing

Once we started modifying the existing Amber core, we decided it would be valuable to run nightly regression tests. These tests ensured that if we accidentally commit a change which breaks the core, we know about it. As a sub-task of building an automated tester, we needed a tool which could run all of our testbenches and assembly instructions.

Peripherals

4.1 HDMI