Compilation of a CSP-like language

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1 Introduction

The parallel programming language Occam is essentially an implementable sublanguage of CSP. Occam is a concurrent programming language that builds on the communicating sequential processes (CSP), process algebra [?, ?], and shares many of its features

2 Background to the Problem

Most of the programming languages in the computing world have a very heavy syntax and wide grammar, lack parallelism and more so not portable. These programs run on a few clusters, servers and embedded systems.

More so, they lack an extension to Occam which permits recursion and still lack virtual machines which are fully optimized for displaying a simulation, and translating the virtual machine code into native code for a real machine.

3 Problem Statement

The problem this project will address is to produce a small portable implementation of a subset of Occam, to implement a virtual machine based on the inmos transputer, and a compiler which will target the language. The proposed system will implement an extension to Occam which permits recursion and separate virtual machines which are fully optimized for displaying a simulation.

4 Objectives

4.1 Main Objective

The aim of this project is to produce a small portable implementation of a subset of Occam; the proposed technique is to implement a virtual machine based on the inmos transputer, and a compiler which targets that language

4.2   Other Objectives

- To gather and analyze requirements that will be used in the design and development of a virtual machine based on the inmos transputer, and a compiler which targets that language.

- To implement the designed system

- To test and validate the designed system

5   Methodology

In order to implement a virtual machine based on the inmos transputer, and a compiler which targets that language, we need to collect user requirements using various tools and techniques to achieve our objectives for example requirements analysis, interviews and literature review of existing systems. We will analyze our data collected using various methods such as process modeling specification which will include dataflow diagrams and context diagrams. We will also use process specification methods during analysis of requirements for example action diagrams.

6   Outcomes

7   References