UNIVERSITÀ DI PISA

Master's degree in Computer Engineering

592II Performance evaluation of computer systems and networks

Multiprogrammed server

Designers:

Tommaso Califano

Nicola Ramacciotti

Gabriele Suma

ACADEMIC YEAR 2023/2024

Contents

1 Introduction **5**
1.1 Objectives 5

Chapter 1

Introduction

1.1 Objectives

A multi-programmed server provides service to **N concurrent clients** that request the server to perform transactions. **Local CPU** computations, interactions with the **local disk**, and remote queries to a **distant web server** are all processes that may be involved in transactions. An interaction between clients and server can be defined as follows:

1. A new transaction always requires some processing time as a first step;
2. Transactions can follow different flows based on probability.
3. A reply is sent to the client that originated the request.
4. A user that receives a reply immediately issues another request.

Utilizing the FIFO policy, each module within the system (Local CPU, local disk and the remote web server) is capable of processing a single request at any given time. Considering the previous assumptions, it becomes crucial to evaluate the system's performance with a particular emphasis on throughput and ..... . With the aid of the Omnet++ simulation software, we can gain insights into the system's behavior under various conditions. Furthermore, utilizing MS Excel, we can collect the data obtained from simulations for data analysis and graph representations.