**Workshop WS5**

GridGain

**Assignment**

**Team C**

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# Introduction

## Workshop aims & objectives

The aims of this workshop are to gain knowledge in the area of grid computing technologies in a distributed environment. One of the main objectives of this workshop is to apply the grid computing concepts by implementing a distributed application with GridGain in Java.

Another objective is to use project management as a technique for managing, monitoring and controlling the project.

Additionally it is gain a deeper understanding about when is the right choice to adopt grid technologies for different project types.

# Background

## Overview of Grid Computing

## 2.2. GridGain framework

# Project description

## Project definition

## Requirements

1. We have a compressed 7zip file password protected and need to obtain the password to open the file
2. To obtain the password in the shortest time we will use computing technology with a dictionary attack and the most popular passwords attack
3. The application must be scalable
4. To implement our appropriate Grid environment we will use GridGain
5. GridGain under Java with Eclipse as IDE
6. To simplify the usage of the application is required a GUI
7. The GUI development will be done in Swing

# Project Management

Project management is use as a technique to manage, planning and monitoring the phases of this project.

## Project Team

Our team consists of six individuals. The project leader, Ana Fernandez, Documentation by Maria Estela Gato Barrios, Development by Philipp Trumpp and Matthias Riedel, and test management by Immanuel Hahn and Samir Weiss.

## Project Roles

### Project Manager

Ana Fernandez is in charge of the project coordination, project planning, monitoring and controlling. Her task is to assure that the project accomplishment meets the project requirements and is delivered on time and with the expected quality.

### Development team

The development team takes care of setting up the development environment. They design and define the chosen system architecture and continue with system development and developer tests. They work together with the test management team to provide a system to be tested.

### Test Management

Test management defines the test use cases. They monitor the system performance in response tot he test use cases. They develop futher test cases and provide the required data for testing the system requirements according tot he created test use cases.

### Documentation Writer

The documentation writer is in charge of the project documentation according to the different stages of the project. Set up of all the project documents from project definition, management and planing, development, testings as well as the final project documentation report.

## Project Plan

### Work Breakdown Structure

The main project sections are divided into smaller tasks in to be easier to manage them. The following WBS shows the work packages for our project.

GridGain Workshop WS5

## Project Activities

Check project Schedule

## Project Milestones

Check Project schedule

# Design & Implementation

Problems

* Nodes do not know each other => We have to stay local
* Too complex to extract encrypted password from 7-zip header => transfer archive to nodes and try to extract locally
* We can't test the remote file transfer because of the invisibility of the remote nodes
* ArrayLists can't be used as transferparameters

## System requirements

1. Last Java version (7)
2. To develop the last version of Eclipse (Kepler)
3. Each node needs a 7zip executable

## System Architecture

### Client package

### Server package

### GUI implementation

### Applied algorithms

## Measurements

# Test Management

## Test Environments

## Test Cases

## Test Scenarios

1. We take an encrypted file and test how long does the decryption on **one** node. If we take the available password list. Else we take the brute force method. Tests with different size of keys.
2. We take an encrypted file and test how long does the decryption on **n** node. If we take the available password list. Else we take the brute force method. Tests with different size of keys.
3. Benchmark According to the current state, it is only possible to examine the test on a single computer and not over the network.  Thus, the same test can be run on different in order to get a measure. If the state is change, the jobs are distributed to different computers so we achieve a unique measure.

As a result of this test several diagrams are formed, which are plotted against time, and the computational load.

### Setting up the test environment

### Using grid nodes

### Load balancing

## Test Conclusion

# Analysis

## Assessing the results

## Project final report

# Conclusion

## Obstacles

## Outlook

# Appendix

## Personal statements of the team members

### Ana Fernandez

### Maria Estela Gato Barrios

### Immanuel Hahn

### Samir Weiss

### Philipp Trummp

### Matthias Riedel

## Assignment Submission Forms

### Ana Fernandez

### Maria Estela Gato Barrios

### Immanuel Hahn

### Samir Weiss

### Philipp Trummp

### Matthias Riedel

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