Project: Network Visualization

Client: Amazon Web Services

Team: Quadcore Productions

Author(s):
Mpho Baloyi
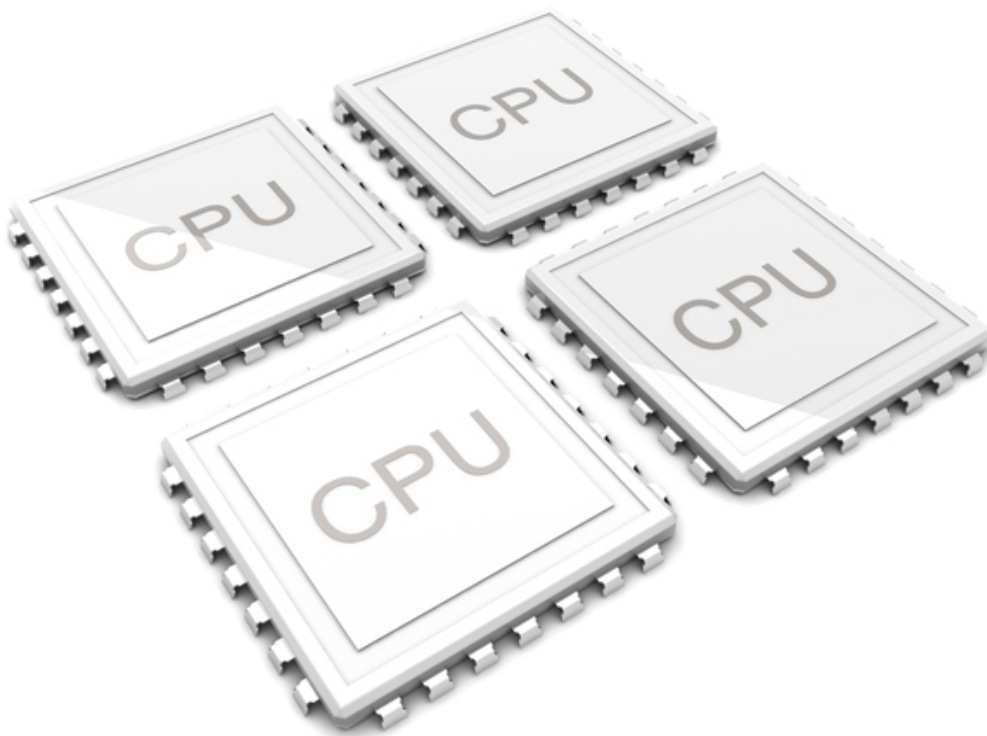Hlengekile Jita
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1 The Team

1.1 Mpho Baloyi

1.1.1 Interests

- Keeping abreast with new technologies

- Learning and using new technologies to solve problems

- Reading up and doing research on new and old concepts in computer science

- Solving riddles and puzzles

- Helping people through ICT

1.1.2 Technical Skills

- Solid programming skills in java,c++ and python

- Fair amount of knowledge in assembly programming

- Web development with HTML,JAVASCRIPT,JQUERY,CSS,PHP,AJAX,ANGULARJS

- Interaction Design

- Database design with MySQL

- Understanding of process development

- Unit testing,mocking and dependency Injection

1.1.3 Non-Technical Strengths

- Excellent Communication skills

- Patient

- Creative approach to problem solving

- Pay attention to detail

- Excellent planning skills

- Ability to grasp concepts quickly

- Willingness to learn new things

- Ability to interpret and follow technical plans

- Ability to collaborate and work efficiently with other people

- Ability to work under pressure

1.1.4 Relevant Past Experiences

1.1.5 Reasons for wanting to do the project

My interest and deep passion for Internet of Things,helping people and more importantly providing people with means to take care of the environment through careful power consumption are the main reasons why I want to do this project. I also want to do this project because it is an opportunity to learn and see how software and hardware work together which has always been one of my many interests.The project presents an opportunity to learn new things,acquire new skills and refine my skills and I believe this is the head-start I need for my career in Computer Science.

1.2 Hlengekile Jita

1.2.1 Interests

1.2.2 Technical Skills

1.2.3 Non-Technical Strengths

1.2.4 Relevant Past Experiences

1.2.5 Reasons for wanting to do the project

1.3 Moses Mayimela

1.3.1 Interests

1.3.2 Technical Skills

1.3.3 Non-Technical Strengths

1.3.4 Relevant Past Experiences

1.3.5 Reasons for wanting to do the project

1.4 Themba Mbhele

1.4.1 Interests

1.4.2 Technical Skills

1.4.3 Non-Technical Strengths

1.4.4 Relevant Past Experiences

1.4.5 Reasons for wanting to do the project

2 Project Execution

2.1 Project Development Methodology

2.1.1 Data Collection

The first step is to retrieve the network data. The information may be retrieved from a file or web source.

2.1.2 Data Classification

The data will now be validated for correctness. If the data is valid, the different members of the network (parent node, sub-parent node and leaf

nodes) will be identified and classified accordingly. To arrange the data, data structures such as trees will be used.

The members of the network that have been identified are:

- **Parent node:** This is the member from which all the other members will be referenced (This is the Main parent or root node).

- **Sub-Parent node:** This is a member that is referenced from another member and has other members that are referenced through it (It is a child with children).

- **Leaf node:** This member is at the lowest level of the tree data structure, it is referenced through a parent and has no members that are referenced through it (It has no children).

2.1.3   Data visualization

After all the data has been retrieved successfully and the members classified to the respective types, the data will then be loaded to the screen for visual representation (visualize). At this stage, the data can be viewed while allowing interactions for the user. The interactions will include zooming in and out of the visualizer,panning around the graph, click events for more information on a specific member of the network.
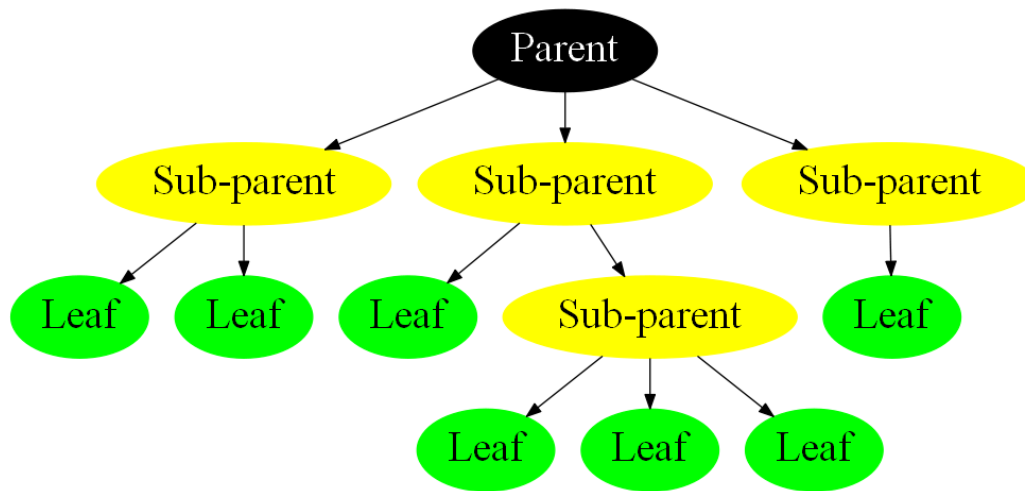
Data organization as data structure and basic representation

The image above is a basic representation of how data structures will be used to organize the data and also a starting point as to how the data will be visualized.

2.2   Communication With Client

To keep the clients informed we are going to use the following means of communication

2.2.1   email

- To inform the client of our progress

- To address any issues or concerns that they client may have

- To acquire information from the client

- To require any resources that the client has to offer for their project,..

2.2.2 Phone calls

This will only be used to address very urgent matters if they arise during the course of the project development however this will only be done with permission from the client and during business hours.

2.2.3 Regular Meetings

These will take place depending on the clients availiability and willness. We may discuss the progress of the project,to address any concerns,etc.

2.2.4 GIT

Access to our git repository will be provided to the client,so the client can be able to monitor our progress and have access to the project material. We are also open to any means of communicatiuon that the client may prefer or suggest.

2.3 Technical Challenges

- Learning the EC2 API

  As this is a very specific technology and one that we have not encountered before but we have a strong believe that through more research,more information from the client and our previous experiences with using an API we can overcome this challenge.

- Retrieving Data from Amazon

  This challenge is only due to the lack of information at this stage we plan to overcome this challenge by using either xml or JSON.

2.4 Technologies