School of Engineering and Applied Science, Ahmedabad University
Cloud Computing
Project Definition
Group – 2

Mentor: - Dr. Sanjay Chaudhary
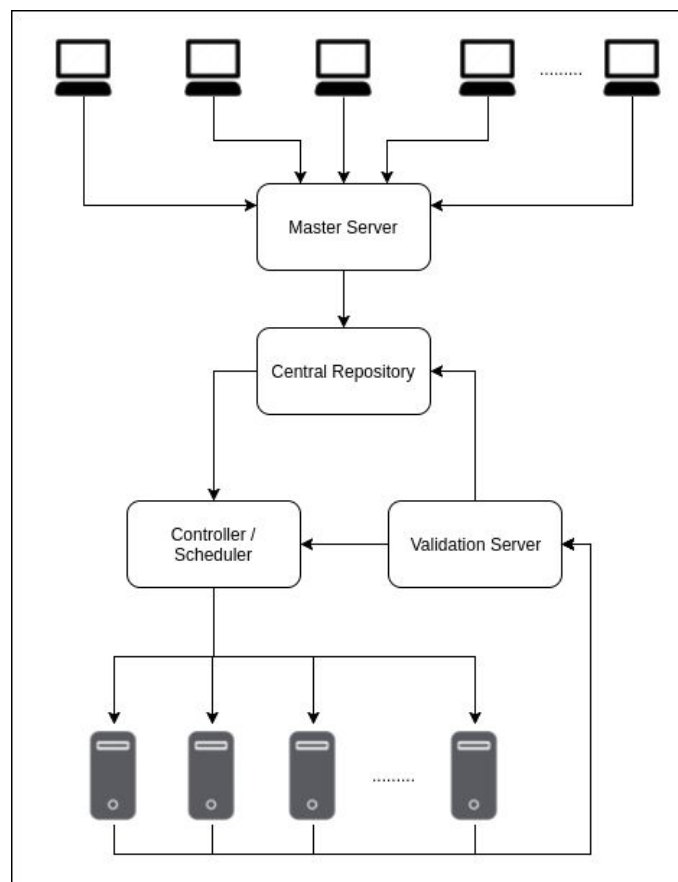
Title: - Cloud Based Compiler

Introduction

Build cloud based web application that provides developer an interface which helps in code compilation, execution, analysis and also provides code optimisation related suggestion if required in code.
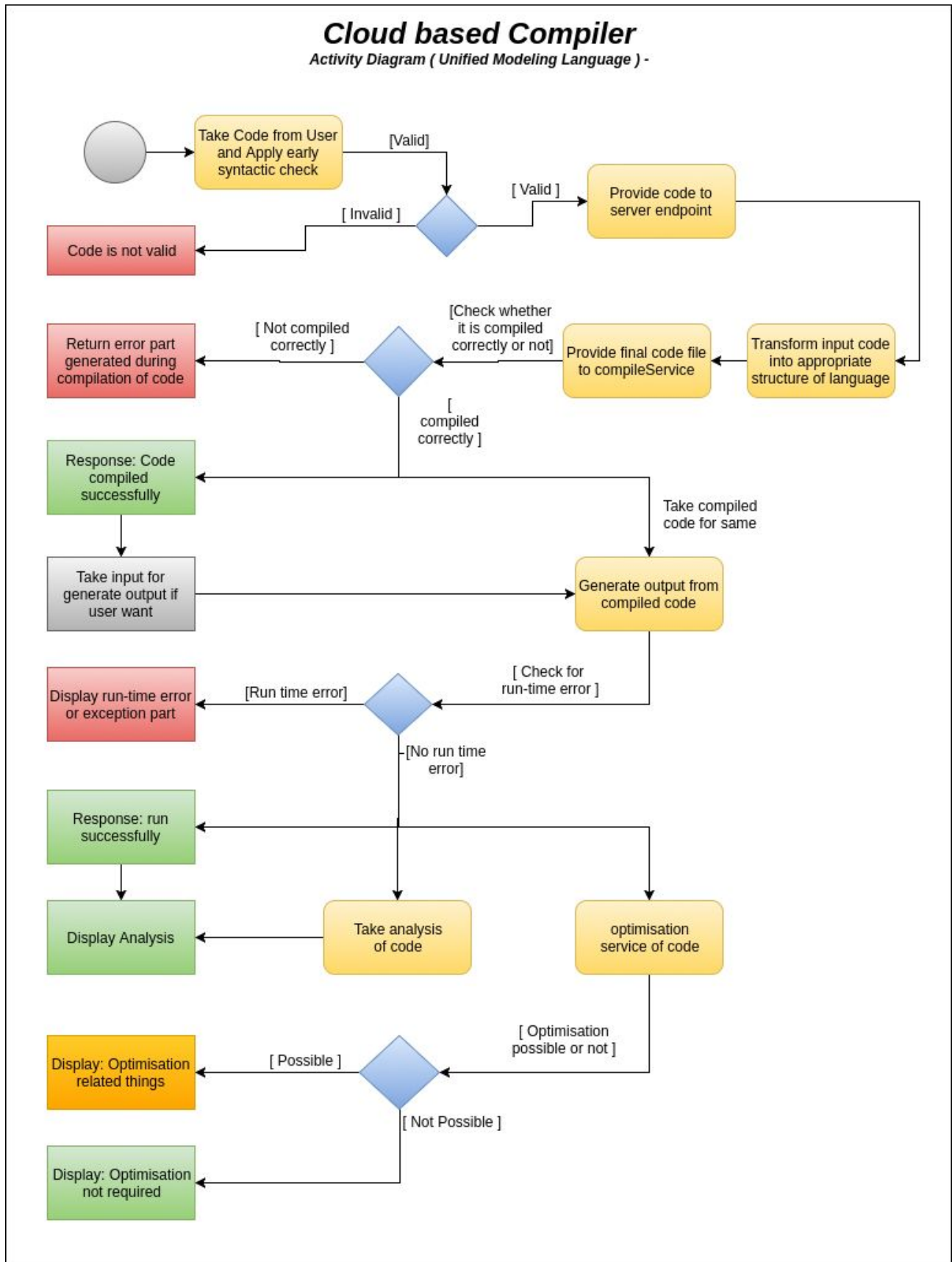
Services

- Service related to code compilation
    - If code is compiled successfully then service related to execution of code
    - Provide analysis of code like how much memory is used, how much time taken by code for execution etc.
- If code is compiled and executed successfully then code optimisation service will be executed and it will suggest user possible ways to optimize code if required.

Physical design

Logical Design

Cloud based Compiler
Activity Diagram (Unified Modeling Language) -

- Take Code from User and Apply early syntactic check
  - [Valid] → [Valid] → Provide code to server endpoint
  - [Invalid] → Code is not valid
- Transform input code into appropriate structure of language
- Provide final code file to compileService
- [Check whether it is compiled correctly or not]
  - [Not compiled correctly] → Return error part generated during compilation of code
  - [compiled correctly] → Response: Code compiled successfully
- Take compiled code for same → Generate output from compiled code
- Take input for generate output if user want
- [Check for run-time error]
  - [Run time error] → Display run-time error or exception part
  - [No run time error] → Response: run successfully → Display Analysis
- Take analysis of code → Display Analysis
- optimisation service of code
- [Optimisation possible or not]
  - [Possible] → Display: Optimisation related things
  - [Not Possible] → Display: Optimisation not required

Timeline and Task division

Initially, web application will provide compilation for C language or Java language only. Services will be implemented in Python or Java.

No.	Task	Tentative Deadline	Executor
1	Implement a code which helps in parsing and storing source code in central repository	22/09/2017	Ashutosh Kakadiya
2	Compiler setup on virtual machines (servers) (Parallel to 1 Task)	24/09/2017	Harsh Mehta & Mihir Gajjar
3	Implement scheduler which controls multiple jobs (for code compilation and execution) in efficient way	30/09/2017	Ashutosh Kakadiya & Shreyas Patel
4	Code which helps in compilation and execution of source code and also maintains logs of it	07/10/2017	Shreyas Patel & Harsh Mehta
5	Code which take action according to compilation process, will make changes in central repository and notify user for it	14/10/2017	Mihir Gajjar & Harsh Mehta
6	Testing and integration of services	28/10/2017	All
7	Make required changes and put the services live ready for use	04/11/2017	All

Team Members

- Ashutosh Kakadiya - 1401075
- Harsh Mehta - 1401085
- Mihir Gajjar - 1401076
- Shreyas Patel - 1401025

References

- Ansari, Aamir Nizam, Siddharth Patil, Arundhati Navada, Aditya Peshave, and Venkatesh Borole. "Online C/C++ compiler using cloud computing." *2011 International Conference on Multimedia Technology*, 2011. doi:10.1109/icmt.2011.6002124.
- Ghaleb, Taher Ahmed. "Toward open-source compilers in a cloud-based environment: the need and current challenges." *2015 International Conference on Open Source Software Computing (OSSCOM)*, 2015. doi:10.1109/osscom.2015.7372684.
- Datta, Arjun, and Arnab Kumar Paul. "Online compiler as a cloud service." *2014 IEEE International Conference on Advanced Communications, Control and Computing Technologies*, 2014. doi:10.1109/icaccct.2014.7019416.