SPL1 Project Proposal Form, 2022
Institute of Information Technology (IIT)
University of Dhaka

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Project Description: Abstract Syntax Tree Generator for Python

"Abstract Syntax Tree generator for Python" is a project which will convert a code written in Python language into an Abstract Syntax Tree(AST). That is, the Abstract Syntax Tree generator will generate an AST for Python code. An AST is a tree representation of the abstract syntactic structure of the source code written in a high-level programming language where each node of the tree denotes a construct occurring in the source code.

ASTs are needed because the inherent nature of programming languages are ambiguous. So, there are aspects of programming languages that CFG(context-free grammar) can't express. Those aspects are expressed using ASTs.

AST generator will generate an AST of Python code. As ASTs are a fundamental part of AST based compiler/interpreter, our project can be used further in building compiler/interpreter.

The project will-

- Take a Python code as input.
- Do a lexical analysis of the input file.
- Do a syntax analysis.
- Code generation of the project.
- Build an AST depending on the lexical analysis and provide an output that will describe the details of the nodes.

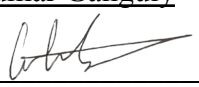
Tokenization and String parsing can be much more challenging because before performing these Python's grammatical constructs should be learnt. Besides, maintaining multiple source files will also be challenging in this project because of the vast amount of codes.

The code will be prepared within approximately two months after the proposal. Besides, the project report and PowerPoint slides for the presentation will be prepared within this time. All of these will be submitted at the end of the project.

The project will help Python applications process the tree structure of the Python abstract syntax grammar. The output will give the details about the nodes which will provide a clear idea about the AST.

Languages or Tools to be used: C++

Supervisor's Name: Kishan Kumar Ganguly

Signature of the supervisor: 

Date: **06.02.2022**

Before the Midterm Presentation:

I confirm that the progress is satisfactory and I am forwarding it for midterm presentation.

Signature of the supervisor:_____

Date:_____

Midterm Presentation Feedback: