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| Function | Description: |
| Class Node | This class represents a node/vertex in the CFG. It contains a unique id for the node as well as the code statement associated with the node. |
| Class CFG | This class will represent the CFG, that will consist of nodes and their corresponding edges. The default constructor is made up of a list of all nodes as well as a list of edges that are connected using from\_node\_id and to\_node\_id. There is also a node counter. |
| Class CFG : add\_node(self, label) | This function is responsible for adding a new node to the CFG. The label is the code statement that is associated with the node. This function will return the ID of the added node. |
| Class CFG : add\_edge(self, from\_node, to\_node) | This function is responsible for adding an edge between the from\_node to to\_node. |
| Class CFG : print\_graph(self) | This function is responsible for printing the graph with the list of vertices and the list of edges. |
| Class Parser | This class is responsible for parsing the code lines and building the CFG. The default constructor contains the cleaned list of code lines, the current line index being parse, and the CFG being made. |
| Class Parser : trim(self, s) | This function removes whitespace from a string |
| Class Parser : match\_start(self, keyword) | This function checks if the current line starts with a given keyword(if, else, while, etc…). Returns true if the current line starts with a keyword |
| Class Parser : parse\_statement(self) | This function parses a single statement and returns the node id of the statement |
| Class Parser : parse\_block(self): | This function parses a block of code that is inside {}, or it will parse a single statement. It returns the entry and exit node ids of the block |
| Class Parser : parse\_if(self) | This function parses an if-else control structure and connects branches |
| Class Parser : parse\_while(self) | This function is responsible for parsing a while loop. It return a loop condition node with its entry and exit |
| Class Parser : parse\_do\_while(self) | This function parses a do while loop and returns the entry and exit nodes of the loop |
| Class Parser : parse(self) | This function parses the entire input and builds the CFG |
| read\_text\_lines(txt\_filename) | This function will read a txt file path and return cleaned lines. |

CS 5860 Programming Assignment Program Documentation

Kcey Stadalman