Introduction (Include your language white paper) (Edward)   
Language Tutorial (A short explanation telling a novice how to use your language.) (James)  
Language Manual (Include your language reference manual) (James, do you have the page file?)   
Language Manual

**Introduction**

Graph algorithms are an extremely ripe domain for networks and relationships of data. Graph algorithms can be very useful in a wide range of applications, including databases, network flow problems, and even language parsing using finite automata. Grape is a language that is designed to make the assembly and manipulation of graphs much more visually comprehensible and syntactically convenient. It should allow its user to implement programs like the Deterministic Finite Automata and the shortest path algorithms such as Dijkstra’s Algorithm easily and concisely. Quick graph descriptions and pattern searching are among the optimizations of the language.

**Language Manual**

1. **Data Types**

**1.1 Primitive Types**

**Integer**: 32-bit signed integer designated by a series of digits

**Boolean**: 1-bit boolean designated by *True* or *False*

**Float**: Signed double precision flowing number designated by a

sign, a decimal and an exponent.

**String**: Series of characters that are enclosed in double quotes

**1.1.1 Examples of Primitives**

Int i = 1;

Bool b = False;

Float pi = 3.14;

String name = "Stephen";

**1.2 Reference Types**

**List** - A collection which is ordered and mutable. It is designated by a

series comma-delimited expressions enclosed in square brackets. List has to be declared using the keyword **List** followed by **<Type of the element>**.

**1.1.2 Examples of Reference Types**

List<Int> a = [1,2,3];

List<String> b = ["Hello", "World"];

**1.3 Graph Types**

**1.3.1 Node**

Node is a container representing a vertex in a graph,

designated by an expression enclosed in single quotes. Node has to be declared using the keyword **Node** followed by **<Type of the node data>**.

**1.3.1.1 Examples of Node**

Node<Int> a = '3';

Node<String> b = '"Hello"';

**1.3.2 Edge**

Edge is an object that represents a directed relationship between two nodes, designated by an expression enclosed in hyphens with a closing bracket representing its directionality. As with a node, the expression contained in an edge can be of any type, for instance an integer containing a cost of traversing that edge. Edge has to be declared using the keyword **Edge** followed by **<Type of the edge data>**.

**1.3.2.1 Example of Edge**

Edge<Int> a = <<-3->>;

**1.3.3 Graph**

Graph is a collection of Nodes and Edges that can be interconnected or disjoint. Graph initialization is designated by a space-delimited path of nodes and edges, enclosed in double angle brackets. Graph has to be declared using the keyword **Graph** followed by **<Type of node data, Type of edge data>**.

**1.3.3.1 Example of Graph I**

Graph<Int, Int> x;

x = <<'3' -3- '4'>>;

Graphs can contain any Nodes of any type and any Edges of any type. More complicated graphs can be described using a comma-delimited series of paths. Reference names can be passed into the graph.

**1.3.3.2 Example of Graph II**

Node<String> a = '"Atlanta"';

Graph<String, Int> cities =

<<a -5- '"Charleston"', a -30- '"New York"', a -100- '"San Francisco"'>>;

Graph initialization can be used to describe paths wherein two edges share a common node between them, for instance:

**1.3.3.3. Example of Graph III**

Graph path = <<'1' -30- '2' -40- '3'>>;

These paths are evaluated from left to right, where the *from*of each subsequent Edge is the same as the *to* of the Edge preceding it. In the above example, the Nodes containing Integers 1 and 3 are both connected to the node containing '2' via the Edges containing 30 and 40 respectively.

Undirected edges can be expressed in the context of a graph using the “- data -” shorthand. They are evaluated as a pair of directed edges pointing to both of the nodes, like so:

<<'1' -3- '2'>>

1. **Operators and Expressions**

**2.1 Variable Assignment**

The ***=*** operator is used for a variable assignment. The right-hand expression is evaluated and its value is assigned to the left-hand typed ID. LHS and RHS must have the same type. This operator will be evaluated right-to-left.

**2.2 Arithmetic Operators**

The arithmetic operators are ***%*** (Modulo), ***\*\**** (Exponent), ***\**** (Multiplication), ***/*** (Division), ***+*** (Addition) and ***-*** (Subtraction). They are all binomial operators. The minus sign can also be used as a unary operation to invert a number's sign (Negation).

**2.3 Relational Operators**

The relational operators are ***<*** (Less than) ***>*** (Greater than) ***<=*** (Less than or equal to) ***=>*** (Greater than or equal to) ***==*** (Equal to) ***!=*** (Not equal to). They are evaluated from left to right. They each require two values which are to be compared and will return *True* if the comparison is truthful and *False*otherwise.

**2.4 Boolean Operators**

The logical operators are *not*, *and*, and *or*. Not negates the subsequent boolean, while and, or, and both return the logical comparison of the values on either side of them.

**2.4.1 Example of Boolean Operators**

Bool T = True

Bool T = False

Bool Yes = t or f

Bool No = not t

**2.5 Precedence and Order of Operations**

Parentheses have the highest priority in the evaluation of expressions. Logical and relational operators have lower precedence than the arithmetic operators, so statements including that include logical or relational operators alongside arithmetic operations will evaluate the arithmetic statement first and then apply relational and logical operators to them in that order. For instance this statement evaluates to *True*:

Bool yes = 3 > 5 - 2 and 2 + 2 <= 4

1. **Programming Structure**

Grape programs are described as a single source file which contains a series of global statements or function declarations which are evaluated from top to bottom.

**3.1 Blocks and Statements**

Grape is an imperative programming language and is designed to be written in blocks, a series of statements which are executed top to bottom. Statements within a block are delimited by semicolons and can span an arbitrary number of lines.

**3.2 Comments**

Single-line comments are designated by a double forward slash and are terminated by a new line. Multi-line comments are designated by three forward slashes and are terminated by another three forward slashes.

**3.2.1 Example of Comments**

Int a = 5; // Look 'ma a comment!

///

Welcome to the COMMENT ZONE!

///

**3.3 Functions**

Functions act as a way to compartmentalize segments of your program. Functions are defined by a return type, an ID, and zero or more comma-delimited parameters enclosed in parentheses. The function body consists of a series of statements that must contain a return statement specifying the value to be returned.

**3.3.1 Example of Function Declaration**

fun return-type function-name(param, param) { body }

Grape implementation of Euclid's Algorithm using a recursive function:

fun Int gcd(Int a, Int b) {

Int r = a % b;

if (r == 0) {

return b;

}

return gcd(b, r);

}

Functions can be called anywhere in the program body or in any function body, including its own. Grape supports recursion. A function call is designated by the function ID and a series of parameters enclosed in parentheses.

Int a = gcd(10, 15);

1. **Control Flow**

**4.1 Conditionals**

Grape supports if statements that may contain an optional else condition to execute if the given condition is false.

**4.1.1 Example of Conditional**

if (r == 0) { return 3; }

else { return 2; }

**4.2 Loops**

*while* loops are designated by a looping condition and a block to be executed as long as the condition is truthful.

**4.2.1 Example of While**

while (x < 5) {

x = x + 1;

}

1. **Standard Library**

The Grape standard library provides useful built-in methods for manipulating the List, Dict, and Graph types, as well as for standard I/O:

***print(a)*** - writes a to stdout.

**5.1 List Methods**

***l.append(x)*** - append x to the end of the List and return the modified

List.

***l.clear()*** - remove all items from the List and return the modified List

***l.copy()*** - return a deep copy of the List

***l.insert(i,x)*** - insert variable x at index i and return the modified List

***l.pop\_list()*** - remove and return the last element from the List

***l.pop\_list\_front()*** - remove the element from the beginning of the List

and return the last element from the List

***l.push\_list(x)*** - add the element to the end of the List

and return the last element from the List

***l.push\_list\_front(x)*** - add the element to the beginning of the List

and return the first element from the List

***l.remove(x)*** - remove the first instance of x and return the modified

List

***l.reverse()*** - reverse the entire list, and return the reversed List

***l.size()*** - return the number of elements in the List

* 1. **Graph Methods**

***g.size()*** - return the number of Nodes in the Graph

***g.leaves()*** - return a list of Nodes with only one incoming Edge

***g.neighbors(x)*** - return a List of Nodes adjacent to Node x

***g.find(x)*** - return the list of all Nodes that contain the value x

***g.empty()*** - return ***True*** of the Graph is empty, otherwise return ***False***

***g.distance(x, y)*** - return distance between Node x and y

***g***.get

**Project Plan** (Timmy)

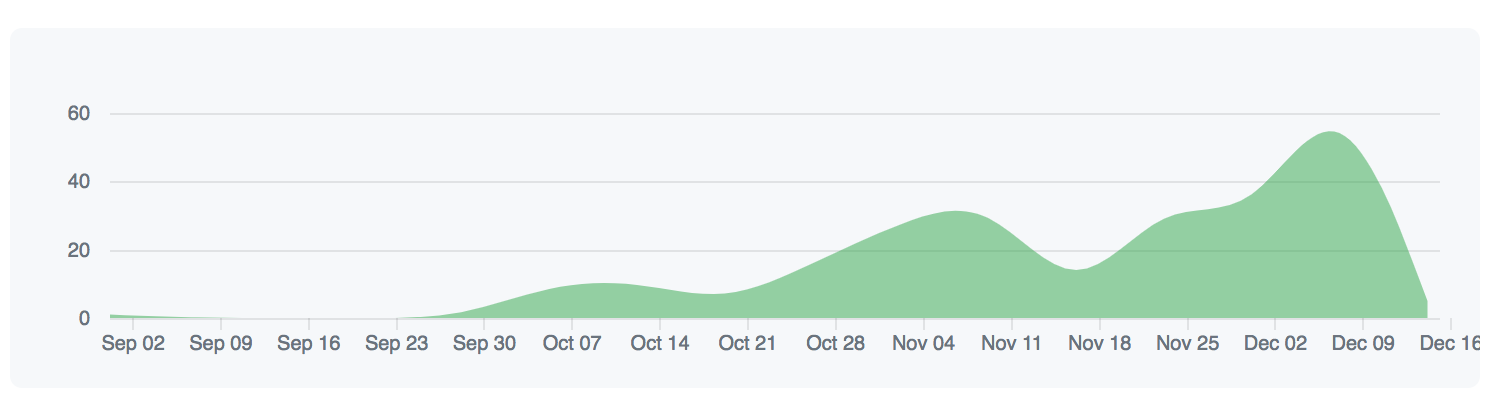
**Weekly meetups:**

In order for the group to slowly establish the codebase, we scheduled a meeting once a week with our TA, Dean Deng. We also met at least two more times a week to discuss the project goals. At the start, these meeting were primarily discussions of broader concept, of the syntax, and the functionality of the language and throughout the semester, the team incrementally met more and more often, shifting from discussion to delegating technical tasks to each individual.

**Workflow:**

All of the project is located within Docker, because it allows us to streamline to development among teammates. However, while programming, members can either choose work on local repository that is mounted onto the docker or the docker container itself. As we make changes throughout the project, we used Git version control and Github, and at times, worked from new branches to test new features. To ensure that there are not erroneous code being pushed onto the shared repository, every member can only push compliable code.

The graph below plots the project’s commits over the course of the semester. As one can tell, there are incrementally more and more commits at the second half of the semester, as we finalize the language and make necessary changes for



**Programming Style Guide:**

1. Always use tabs when we need to indent.
2. For the C library, we strive to make reasonable function names to ensure clarity
3. At the start of a git commit message, denotes whether the commit is a “feat” or “fix”.
4. Comment on particularly intricate code to convey meaning clearly.

**Project timeline:**

During the semester, we scheduled milestones to achieve throughout the semester and strived to actualize them. In reality, the process turned out to be more of a back-and-forth trajectory as a lot of times, we realize that there are previous mistakes or designs that we wanted to alter.

|  |  |
| --- | --- |
| Milestones | Time |
| LRM, Scanner done, elementary Parser | 10/15 |
| Parser, AST, SAST, “Hello World” | 11/18 |
| Semantically checked types (edges, nodes) | 11/25 |
| Edge, Node, List typing in codegen.ml | 12/2 |
| Graph type in codegen.ml | 12/10 |
| Writing C library, Linking C library | 12/11 |
| List indexing, Dot notation, Overloading functions | 12/12 |

**Roles and Responsibility:**

**Language Guru - James Kolsby**

The language guru, a true visionary, dictates the utility and aesthetics of the language, Grape. As he caressed the purple marbles bursting of nature’s nectar, he gasped in Archimedean fashion: “A grape cluster is basically a tree, a graph!”

**Project Manager - Po Yu (Timmy) Wu**

The project manager primary deals with humans, the only part in the project that are, unfortunately, not made of booleans. He strives to keep the project afloat by keeping track of the schedule, coaxing the hearts and minds of self-absorbed Columbia students, and, oftentimes, making announcements in a messaging group that sometimes seems to be constituted of only he, himself and “hi”.

**System Architect - HyunBin (Edward) Yoo**

The system architect decides the software development environment that the group operates in and just like Meryl Streep in the Sophie’s choice, the architect knows all too well that no matter what he chooses, he and his team would carry the burden, forever haunted.

**Tester - Nick Krasnoff**

The tester ensures that the code that we so diligently farmed truly comes to fruition and works the way we wanted it to. His responsibility includes building test suites, writing test scripts, and having inhumanely amount of patience for his trial and error was full of disappointments and, well, errors.

Project log

1. commit 3407807c5e4154996611932632e279254130f747
2. Author: HyunBin Yoo <hy2506@columbia.edu>
3. Date:   Wed Dec 19 07:30:53 2018 -0500
5. misc
7. commit 2de8197b2ff37d8b1a0e9864b4cdfa4db23b7253
8. Author: HyunBin Yoo <hy2506@columbia.edu>
9. Date:   Wed Dec 19 07:30:17 2018 -0500
11. misc
13. commit 29b732e883783b5eb1a6f60215028b4b1d53f634
14. Author: HyunBin Yoo <hy2506@columbia.edu>
15. Date:   Wed Dec 19 07:29:11 2018 -0500
17. feat: Final\_report
19. commit a2c74f37b1ce7d1181f803caa37d0a14772c0ebf
20. Author: HyunBin Yoo <hy2506@columbia.edu>
21. Date:   Wed Dec 19 03:05:30 2018 -0500
23. Final report
25. commit 84a0146fdd6b480d5b79d5f484da787c6a92c6ce
26. Merge: b35ccd5 4b1625c
27. Author: James Kolsby <jrkolsby@mac.com>
28. Date:   Mon Dec 17 21:58:23 2018 -0500
30. Merge pull request #3 from jrkolsby/final
32. Final
34. commit 4b1625c103a1f4aa71866aa2cc89b351ed048501
35. Merge: 2efba40 b35ccd5
36. Author: James Kolsby <jrkolsby@mac.com>
37. Date:   Mon Dec 17 21:58:08 2018 -0500
39. Merge branch 'master' into final
41. commit b35ccd5d081121e78fe3b3a6f9f88f77c3dde62d
42. Merge: ef95db5 c45addf
43. Author: Tim <pw2440@columbia.edu>
44. Date:   Mon Dec 17 21:56:11 2018 -0500
46. feat: graph functions
48. commit ef95db5c6f6385266e0ea72267940c6e43782b49
49. Author: Tim <pw2440@columbia.edu>
50. Date:   Mon Dec 17 21:50:56 2018 -0500
52. feat: function declaration in codegen
54. commit 2efba40a381f46a59794e9b59765d546d1cfdee7
55. Author: James Kolsby <jrkolsby@mac.com>
56. Date:   Mon Dec 17 21:46:35 2018 -0500
58. fix: update tests
60. commit 6c264f3a6fc24fcf82a1f75f4507ca24b8140d25
61. Author: James Kolsby <jrkolsby@mac.com>
62. Date:   Mon Dec 17 21:44:08 2018 -0500
64. fix: tests
66. commit 4fbe2532414c445d26023baddd897dd913f88edb
67. Author: James Kolsby <jrkolsby@mac.com>
68. Date:   Mon Dec 17 21:37:59 2018 -0500
70. fix: func\_decl keys
72. commit af8e1cc3b80993a006a3b0451bfd2c658aefd610
73. Author: James Kolsby <jrkolsby@mac.com>
74. Date:   Mon Dec 17 21:34:19 2018 -0500
76. feat: overloading size and print
78. commit c45addf69cdd4d641d21b5fde9ed05d700dcbac7
79. Author: HyunBin Yoo <hy2506@columbia.edu>
80. Date:   Mon Dec 17 18:22:51 2018 -0500
82. feat: string argument fixed
84. commit eda9b7ca85b15d88fe9b009aa3b4a312a272f1f0
85. Author: HyunBin Yoo <hy2506@columbia.edu>
86. Date:   Mon Dec 17 18:21:33 2018 -0500
88. feat: switched arguments in graph.c
90. commit 054e955049518e84eb11d86023cb0cb3abd76ce2
91. Merge: ffe82cc f21f0eb
92. Author: HyunBin Yoo <hy2506@columbia.edu>
93. Date:   Mon Dec 17 18:16:28 2018 -0500
95. feat
97. commit ffe82cccb67ce36e609b435b226f711e54770ac0
98. Author: HyunBin Yoo <hy2506@columbia.edu>
99. Date:   Mon Dec 17 18:14:20 2018 -0500
101. switched arguments
103. commit f21f0ebf56e392953c69932d8d2e2edb6b997693
104. Author: James Kolsby <jrkolsby@mac.com>
105. Date:   Mon Dec 17 17:44:13 2018 -0500
107. feat: scoped declarations
109. commit 4901a3971818a94c5f5d66efd49cea036d81c49d
110. Merge: 2c3abd0 73b166c
111. Author: James Kolsby <jrkolsby@mac.com>
112. Date:   Sun Dec 16 02:22:21 2018 -0500
114. Merge pull request #2 from jrkolsby/develop
116. Develop (V0.1)
118. commit 73b166cca9fc59a9c3266a9841aac5ea8a0710f8
119. Merge: 8386915 2c3abd0
120. Author: James Kolsby <jrkolsby@mac.com>
121. Date:   Sun Dec 16 02:22:12 2018 -0500
123. Merge branch 'master' into develop
125. commit 838691570360efa9d6ef2b783fdcfc86d18c0851
126. Author: James Kolsby <jrkolsby@mac.com>
127. Date:   Sun Dec 16 02:17:15 2018 -0500
129. feat: fixed test cases
131. commit ab1537dbd6a21348798cf0fc8c258ffea70f90ca
132. Author: James Kolsby <jrkolsby@mac.com>
133. Date:   Sat Dec 15 23:46:29 2018 -0500
135. fix: assign semantics
137. commit a2211a7d27723658eef58dc2a7cd6a61b18ea8ef
138. Merge: 96452a4 2235b91
139. Author: Nick Krasnoff <nsk2144@columbia.edu>
140. Date:   Sat Dec 15 23:45:06 2018 -0500
142. Merge branch 'develop' of https://github.com/jrkolsby/Grape into develop
144. commit 96452a4c12ea2904bf8ad8fc41a0bd1864ffefb9
145. Author: Nick Krasnoff <nsk2144@columbia.edu>
146. Date:   Sat Dec 15 23:45:04 2018 -0500
148. additional test cases
150. commit 2235b91fd3162c285ad2cc6b58efb1f548792a2e
151. Author: James Kolsby <jrkolsby@mac.com>
152. Date:   Sat Dec 15 23:35:20 2018 -0500
154. fix: dfa
156. commit c91f590abb62caf8c07a57da6b3489c3f2f2b2e0
157. Merge: d8c25d5 ab1cdc1
158. Author: Nick Krasnoff <nsk2144@columbia.edu>
159. Date:   Sat Dec 15 23:09:19 2018 -0500
161. Merge branch 'develop' of https://github.com/jrkolsby/Grape into develop
163. commit d8c25d530f4d8e48ef14453a381ae00c1a5b8910
164. Author: Nick Krasnoff <nsk2144@columbia.edu>
165. Date:   Sat Dec 15 23:09:12 2018 -0500
167. Semant **case** **for** empty lists
169. commit 2c3abd00c160650815bec2018746ac0d05b87af0
170. Author: HyunBin Yoo <hy2506@columbia.edu>
171. Date:   Sat Dec 15 23:04:44 2018 -0500
173. feat: switched arguments in list
175. commit ab1cdc13520b9c2c9e183657a3c9094c0a9a2b28
176. Author: James Kolsby <jrkolsby@mac.com>
177. Date:   Sat Dec 15 22:46:58 2018 -0500
179. fix: tests
181. commit 46052803174f44209cb3518b2a45ea079568504e
182. Author: James Kolsby <jrkolsby@mac.com>
183. Date:   Sat Dec 15 22:41:07 2018 -0500
185. fix: get\_outgoing2
187. commit 9e635a2228e9113e1f47e5a9dc107f2fb75328ae
188. Author: Nick Krasnoff <nsk2144@columbia.edu>
189. Date:   Sat Dec 15 22:40:29 2018 -0500
191. Fixed tests
193. commit afa30d7b09179a4fa8bad3f7632cd945fa98ea96
194. Author: James Kolsby <jrkolsby@mac.com>
195. Date:   Sat Dec 15 22:13:35 2018 -0500
197. fix: reference pointers
199. commit 30000aa39709353a0af9c8be238adfb49d4348ef
200. Author: James Kolsby <jrkolsby@mac.com>
201. Date:   Sat Dec 15 21:58:32 2018 -0500
203. fix: nested lists
205. commit 2ebbe985086bc9271c2705a6c00efc30e12c9a1c
206. Merge: ec12e3f c8a3075
207. Author: HyunBin Yoo <hy2506@columbia.edu>
208. Date:   Sat Dec 15 21:41:13 2018 -0500
210. Merge branch 'master' of https://github.com/jrkolsby/Grape
212. commit ec12e3f5c718e8c13b115d01ac2cc1e1e4e35f15
213. Author: HyunBin Yoo <hy2506@columbia.edu>
214. Date:   Sat Dec 15 21:41:07 2018 -0500
216. feat: graph\_to\_list & neighbor & isEqualNode
218. commit c8a307513d5035bdae2d3057e54a128c98bbb229
219. Author: NiSoKr <36091505+NiSoKr@users.noreply.github.com>
220. Date:   Sat Dec 15 21:34:42 2018 -0500
222. Update dijkstra.grp
224. commit a85db8a1088462565689cb557dd485d1dc1f774e
225. Author: James Kolsby <jrkolsby@mac.com>
226. Date:   Sat Dec 15 21:00:18 2018 -0500
228. fix: data\_value
230. commit 36c64a8d35772d20381bf585c0132cc251abace0
231. Merge: b4ea3cb c9be4e0
232. Author: HyunBin Yoo <hy2506@columbia.edu>
233. Date:   Sat Dec 15 20:58:10 2018 -0500
235. Merge branch 'master' of https://github.com/jrkolsby/Grape
237. commit b4ea3cb17c1ad1c9e98dbbebfdb399cd5746f172
238. Author: HyunBin Yoo <hy2506@columbia.edu>
239. Date:   Sat Dec 15 20:58:08 2018 -0500
241. feat: fixed list library
243. commit c9be4e0682473418c0c26d39cb62d861a5d58e91
244. Author: Tim <pw2440@columbia.edu>
245. Date:   Sat Dec 15 20:56:57 2018 -0500
247. added editted dijkstra.grp
249. commit d9774b3f97d47fb2caa07e721dbe1496900f0ae4
250. Author: James Kolsby <jrkolsby@mac.com>
251. Date:   Sat Dec 15 20:38:43 2018 -0500
253. fix: multi-prop works
255. commit efb99a3abbaf749ad8a3e9083554bf39d4683265
256. Author: James Kolsby <jrkolsby@mac.com>
257. Date:   Sat Dec 15 19:15:56 2018 -0500
259. fix: list index
261. commit 7de4cc121c810527807495bd158c4786fb5329af
262. Author: Timmypoyu <pw2440@columbia.edu>
263. Date:   Sat Dec 15 18:32:43 2018 -0500
265. added dijkstra.grp
267. commit 640c379e9240e5a5dcd5557b1d1daa146e6f9118
268. Author: James Kolsby <jrkolsby@mac.com>
269. Date:   Sat Dec 15 18:08:18 2018 -0500
271. broken: outgoing
273. commit 8809f793bb53c510535ac1eae286d0390d355e7a
274. Author: James Kolsby <jrkolsby@mac.com>
275. Date:   Sat Dec 15 02:57:24 2018 -0500
277. feat: **char** index. broken: methods
279. commit 34c3b2553cdf6e1afccb889161c7941fc2a74363
280. Author: James Kolsby <jrkolsby@mac.com>
281. Date:   Sat Dec 15 01:13:10 2018 -0500
283. feat: nested props / indexes
285. commit eb911ff7c09b2efabb453314cc4e24c132bcbf5a
286. Author: James Kolsby <jrkolsby@mac.com>
287. Date:   Fri Dec 14 23:47:16 2018 -0500
289. feat: grape lib, string equals
291. commit bfbf2161cb19815f69f1a7721e5a69caf907f55c
292. Author: James Kolsby <jrkolsby@mac.com>
293. Date:   Fri Dec 14 02:30:23 2018 -0500
295. feat: properties
297. commit 05b4be481af67088f8ea1ee7d71c68fa806faf02
298. Author: James Kolsby <jrkolsby@mac.com>
299. Date:   Fri Dec 14 01:04:22 2018 -0500
301. feat: list index overloading
303. commit 23b3e4059bacfe4a40b21166b8f3e2910c394ee1
304. Author: James Kolsby <jrkolsby@mac.com>
305. Date:   Thu Dec 13 23:56:52 2018 -0500
307. feat: list index
309. commit 2298d003a13c633710cc85a921b16afa67a0a300
310. Author: James Kolsby <jrkolsby@mac.com>
311. Date:   Thu Dec 13 21:33:45 2018 -0500
313. fix: directed edges
315. commit f40f12a7f863f1b93be006a98a9a2ac1cd53e75e
316. Author: James Kolsby <jrkolsby@mac.com>
317. Date:   Thu Dec 13 19:44:42 2018 -0500
319. feat: **new** edge syntax
321. commit cabf3c07502c83d235dc79ac4d75326f5f429869
322. Author: James Kolsby <jrkolsby@mac.com>
323. Date:   Thu Dec 13 16:49:05 2018 -0500
325. fix: ast and sast strings and tests
327. commit f1a5d1ccd2f60a0eb0ca94ec3578b625a1f81e3b
328. Author: HyunBin Yoo <hy2506@columbia.edu>
329. Date:   Thu Dec 13 14:38:18 2018 -0500
331. feat: debugged all graph functions & implemented GraphFind function
333. commit 86d0d3ff0e6999faa0bf1bb1c7f5cee6bb165f7f
334. Author: James Kolsby <jrkolsby@mac.com>
335. Date:   Thu Dec 13 02:09:58 2018 -0500
337. feat: ignore fail files
339. commit b2eecb57f9d99f054b611450c1b9db83090cb0a6
340. Merge: 56f1923 1791323
341. Author: James Kolsby <jrkolsby@mac.com>
342. Date:   Thu Dec 13 02:07:24 2018 -0500
344. Merge branch 'master' of https://github.com/jrkolsby/Grape
346. commit 1791323a40b9ac7813d52a3cba4023d674c5a097
347. Merge: b08da96 0733b5c
348. Author: James Kolsby <jrkolsby@mac.com>
349. Date:   Thu Dec 13 02:03:52 2018 -0500
351. Merge pull request #1 from jrkolsby/declarations
353. Inline Declarations
355. commit 0733b5cc65c9756ff9ee6add7c31be93cdc9f9fa
356. Author: James Kolsby <jrkolsby@mac.com>
357. Date:   Thu Dec 13 01:55:11 2018 -0500
359. fix: tests
361. commit d5fcfc4ac427c9edf231fb66a1935a7cea779dd1
362. Author: James Kolsby <jrkolsby@mac.com>
363. Date:   Wed Dec 12 23:43:04 2018 -0500
365. fix: tests
367. commit 74e38207564daca1e3292902e69ea31d319f37f9
368. Author: James Kolsby <jrkolsby@mac.com>
369. Date:   Wed Dec 12 23:23:25 2018 -0500
371. fix: parse conflicts
373. commit 1d1ddd308db9fb616184282a17d4840d893f0bae
374. Author: James Kolsby <jrkolsby@mac.com>
375. Date:   Wed Dec 12 18:21:10 2018 -0500
377. fix: dfa.grp
379. commit e201e1f1a48a7dd4dd064a5de13d9d9487c08ed7
380. Author: Nick Krasnoff <nsk2144@columbia.edu>
381. Date:   Wed Dec 12 21:36:49 2018 -0500
383. Working DFA test
385. commit ef244a44b24e9365fc289724cdcf9c227e7287a8
386. Author: James Kolsby <jrkolsby@mac.com>
387. Date:   Wed Dec 12 21:47:51 2018 -0500
389. temp: needs empty declaration
391. commit d8e74578825dd8b6380b462740cb64b1257dda35
392. Author: James Kolsby <jrkolsby@mac.com>
393. Date:   Wed Dec 12 21:15:35 2018 -0500
395. feat: declarations
397. commit 1e03dbdd9c1b9e3b47cd7fcd68d3c0e8920739dc
398. Author: James Kolsby <jrkolsby@mac.com>
399. Date:   Wed Dec 12 19:22:29 2018 -0500
401. temp: added declaration
403. commit 57fe1f4ba4154ee04bb71e15fa83b0800750e102
404. Author: James Kolsby <jrkolsby@mac.com>
405. Date:   Wed Dec 12 18:21:10 2018 -0500
407. fix: dfa.grp
409. commit 56f1923d2dc03404dc5bdd4341eae63f3272b106
410. Author: James Kolsby <jrkolsby@mac.com>
411. Date:   Wed Dec 12 21:47:51 2018 -0500
413. temp: needs empty declaration
415. commit b08da96a9d4c9ec34e3733ced6208e0846b4ee5f
416. Merge: b380e33 5ff9174
417. Author: HyunBin Yoo <hy2506@columbia.edu>
418. Date:   Wed Dec 12 21:37:48 2018 -0500
420. Merge branch 'master' of https://github.com/jrkolsby/Grape
422. commit b380e3312d7e520860e59dab02409787dd2f47f3
423. Author: HyunBin Yoo <hy2506@columbia.edu>
424. Date:   Wed Dec 12 21:37:43 2018 -0500
426. feat: commented out remove
428. commit 5ff9174f4dabca10516daf11045643c76526ccc6
429. Author: Nick Krasnoff <nsk2144@columbia.edu>
430. Date:   Wed Dec 12 21:36:49 2018 -0500
432. Working DFA test
434. commit 9a9d20ab105b5e7242df6a06f9bd4424003f0f6b
435. Author: James Kolsby <jrkolsby@mac.com>
436. Date:   Wed Dec 12 21:15:35 2018 -0500
438. feat: declarations
440. commit 0e569a8bf51a2bee32b03f6ba0ba14848b36d1d8
441. Author: James Kolsby <jrkolsby@mac.com>
442. Date:   Wed Dec 12 19:22:29 2018 -0500
444. temp: added declaration
446. commit dae554624cf154b0cdfae1086a6dd0195b8062ca
447. Author: James Kolsby <jrkolsby@mac.com>
448. Date:   Wed Dec 12 18:21:10 2018 -0500
450. fix: dfa.grp
452. commit b6712c1bcbc909d019d339cda503d66dd880618b
453. Author: Nick Krasnoff <nsk2144@columbia.edu>
454. Date:   Wed Dec 12 21:16:05 2018 -0500
456. Dfa testing
458. commit 92b2389df330700529d8989de5224f66c0f2d21f
459. Merge: 9ae49c1 7e9418c
460. Author: Tim <pw2440@columbia.edu>
461. Date:   Wed Dec 12 21:00:31 2018 -0500
463. Merge branch 'master' of https://github.com/jrkolsby/Grape
465. commit 9ae49c13dcc18a61a935c6a8c6d34a60a7315a6b
466. Author: Tim <pw2440@columbia.edu>
467. Date:   Wed Dec 12 21:00:16 2018 -0500
469. str\_equal
471. commit 7e9418c79764db7286bb231fa2ce802b820ac576
472. Author: Nick Krasnoff <nsk2144@columbia.edu>
473. Date:   Wed Dec 12 20:58:11 2018 -0500
475. Refixed get\_outgoing
477. commit 6eea7e5beb6141c1ed9d487dcaec44eecec12e15
478. Merge: 0a27ad1 db107d2
479. Author: HyunBin Yoo <hy2506@columbia.edu>
480. Date:   Wed Dec 12 20:52:59 2018 -0500
482. Merge branch 'master' of https://github.com/jrkolsby/Grape
484. commit 0a27ad149401c2ebdb6a3414c7c92e6c78b58320
485. Author: HyunBin Yoo <hy2506@columbia.edu>
486. Date:   Wed Dec 12 20:52:50 2018 -0500
488. feat: added str\_equal
490. commit db107d273ef952a47b4e0c540c652aac144bc390
491. Author: Nick Krasnoff <nsk2144@columbia.edu>
492. Date:   Wed Dec 12 20:46:57 2018 -0500
494. Added test files
496. commit 01e677c71d3e5f2a17bc8b2e1ac20a113c63ae64
497. Author: Tim <pw2440@columbia.edu>
498. Date:   Wed Dec 12 20:33:14 2018 -0500
500. get\_char sig
502. commit b95b23f5b4c0d0552d0df432a60ebf949bd8231d
503. Author: Tim <pw2440@columbia.edu>
504. Date:   Wed Dec 12 20:28:20 2018 -0500
506. scall errors
508. commit d297d47601e1f4975de1c354720e652669fef089
509. Merge: 09bd4e7 829b13a
510. Author: Tim <pw2440@columbia.edu>
511. Date:   Wed Dec 12 20:13:34 2018 -0500
513. Merge branch 'master' of https://github.com/jrkolsby/Grape
515. commit 09bd4e737744fa0d94608a8ddfe518b2b6f2befb
516. Author: Tim <pw2440@columbia.edu>
517. Date:   Wed Dec 12 20:13:32 2018 -0500
519. str\_size error
521. commit 829b13ae4bf924a3dce2dc01a64951b3399bd8d2
522. Author: Nick Krasnoff <nsk2144@columbia.edu>
523. Date:   Wed Dec 12 20:12:47 2018 -0500
525. Modified dfa test
527. commit 3ad04adf08e05c7be7ecb3be239663af271de818
528. Author: Tim <pw2440@columbia.edu>
529. Date:   Wed Dec 12 19:56:14 2018 -0500
531. temp 2 dfa
533. commit 0efe531aa4822d987b50f1cb77a5e44480c7af83
534. Merge: 85f0de7 628f294
535. Author: Tim <pw2440@columbia.edu>
536. Date:   Wed Dec 12 19:53:01 2018 -0500
538. temp comit **for** dfa
540. commit 628f294f205048c13d35b3970e5dcf324a24c704
541. Merge: 94c6b28 44eaf4f
542. Author: HyunBin Yoo <hy2506@columbia.edu>
543. Date:   Wed Dec 12 19:44:00 2018 -0500
545. Merge branch 'master' of https://github.com/jrkolsby/Grape
547. commit 94c6b28db0b391e047640d56b62279557bedbc63
548. Author: HyunBin Yoo <hy2506@columbia.edu>
549. Date:   Wed Dec 12 19:43:57 2018 -0500
551. feat: working on graph functions
553. commit 7c093122d153c0068ed968b6a91b0654265bcd1a
554. Author: HyunBin Yoo <hy2506@columbia.edu>
555. Date:   Wed Dec 12 19:43:41 2018 -0500
557. feat: string length
559. commit 85f0de778b17983e643fff1b9cc9f1f56a5310f7
560. Author: Tim <pw2440@columbia.edu>
561. Date:   Wed Dec 12 19:30:02 2018 -0500
563. dfa test session
565. commit 44eaf4f4f03d15ca792b90bc82db137db6496fa3
566. Author: Nick Krasnoff <nsk2144@columbia.edu>
567. Date:   Wed Dec 12 19:02:44 2018 -0500
569. Modified dfa.grp test
571. commit c8fd58e01c0edb292f3cdb21e8e5c6de6623c9df
572. Merge: 0aee78c 8e3a983
573. Author: Nick Krasnoff <nsk2144@columbia.edu>
574. Date:   Wed Dec 12 18:45:34 2018 -0500
576. Merge branch 'master' of https://github.com/jrkolsby/Grape
578. commit 0aee78cd43cafea1ba391b560e16adc3ea3239de
579. Author: Nick Krasnoff <nsk2144@columbia.edu>
580. Date:   Wed Dec 12 18:45:28 2018 -0500
582. updated test; get\_outgoing finds when a node points to itself
584. commit 8e3a9838d5e810367309714005eaa9f71cf3fef8
585. Merge: 8da79bc f362902
586. Author: Tim <pw2440@columbia.edu>
587. Date:   Wed Dec 12 18:19:15 2018 -0500
589. Merge branch 'master' of https://github.com/jrkolsby/Grape
591. commit 8da79bc4f15c56bd941ac81379a38b7be008e47a
592. Author: Tim <pw2440@columbia.edu>
593. Date:   Wed Dec 12 18:19:12 2018 -0500
595. semant declarations
597. commit f362902a09a0de68743279973577eb9469847942
598. Author: HyunBin Yoo <hy2506@columbia.edu>
599. Date:   Wed Dec 12 18:17:10 2018 -0500
601. deleted
603. commit f798af71a706ed67d52f8e54e30333f780ff174b
604. Merge: 0c93bdd 5d1e36f
605. Author: HyunBin Yoo <hy2506@columbia.edu>
606. Date:   Wed Dec 12 18:16:26 2018 -0500
608. Merge branch 'master' of https://github.com/jrkolsby/Grape
610. commit 0c93bddb420d4033a7c397434fa633d8adb5c4ac
611. Author: HyunBin Yoo <hy2506@columbia.edu>
612. Date:   Wed Dec 12 18:16:21 2018 -0500
614. feat: deleted print
616. commit 5d1e36f98082f2ff3c442b022ec2a3342137ed0d
617. Merge: 2b29209 dde7c32
618. Author: Nick <Nick>
619. Date:   Wed Dec 12 17:52:24 2018 -0500
621. Merge branch 'master' of https://github.com/jrkolsby/Grape
623. commit 2b29209d4c1a929b10e772a752a7cc7499fb1a1b
624. Author: Nick <Nick>
625. Date:   Wed Dec 12 17:52:12 2018 -0500
627. Add edges to node's list of edges
629. commit dde7c3299594927c587eee9df104a29ad814e7ef
630. Author: HyunBin Yoo <hy2506@columbia.edu>
631. Date:   Wed Dec 12 17:39:16 2018 -0500
633. added the header file
635. commit 6b5daf946f9ab0da868d52787402e57edc4335b6
636. Author: HyunBin Yoo <hy2506@columbia.edu>
637. Date:   Wed Dec 12 17:38:07 2018 -0500
639. renamed string file
641. commit ccc5e37e59cbc56db06aa48b1da162db118fbba4
642. Author: HyunBin Yoo <hy2506@columbia.edu>
643. Date:   Wed Dec 12 17:32:52 2018 -0500
645. feat: string function
647. commit fa4770f6877c2044d53b0ca91687543cabcc8edb
648. Author: Nick <Nick>
649. Date:   Wed Dec 12 17:13:49 2018 -0500
651. Fixed typo in graph.c
653. commit cf113207680a9f28656c106f7a85aa9d7770a61f
654. Merge: eaf7c7c 1912017
655. Author: Nick <Nick>
656. Date:   Wed Dec 12 17:10:30 2018 -0500
658. Merge branch 'master' of https://github.com/jrkolsby/Grape
660. commit eaf7c7ceb26aaa1be7b151a1c4960442f022f93e
661. Author: Nick <Nick>
662. Date:   Wed Dec 12 17:10:20 2018 -0500
664. C functions to access Nodes and Edges
666. commit 1912017850fefc6ba8ef60e4073337a60059044a
667. Author: James Kolsby <jrkolsby@mac.com>
668. Date:   Wed Dec 12 16:09:31 2018 -0500
670. fix: dfa test **case**
672. commit 37ff0aaf3aa404fca1848e45e7c18c876ad0dcc4
673. Author: James Kolsby <jrkolsby@mac.com>
674. Date:   Wed Dec 12 15:18:15 2018 -0500
676. feat: dfa test
678. commit d6cc30faa6c02daedd8f06ccf04577c44ce72a5c
679. Author: Nick <Nick>
680. Date:   Wed Dec 12 15:09:12 2018 -0500
682. C **for** getting nodes and edges in .h
684. commit 74112ff92124d0f20ac029c1f7910d12f5969153
685. Author: Nick <Nick>
686. Date:   Wed Dec 12 15:05:36 2018 -0500
688. C **for** getting nodes and edges
690. commit 6d06ab40b2884800def263cd11532a16c94e52a4
691. Author: Tim <pw2440@columbia.edu>
692. Date:   Wed Dec 12 11:00:46 2018 -0500
694. add get str and get **int** funciton to list
696. commit 03267075af74ab2f0756191566b1814ee5007d37
697. Author: Nick Krasnoff <nickkrasnoff@dyn-129-236-216-200.dyn.columbia.edu>
698. Date:   Tue Dec 11 20:28:01 2018 -0500
700. Added C code to get element from a list
702. commit c355387166b7a8edc33e8c03bbfa324347e25e65
703. Author: James Kolsby <jrkolsby@mac.com>
704. Date:   Mon Dec 10 18:46:39 2018 -0500
706. fix: graph init
708. commit 18b45a67a960f262a4e886faa42fc9865e1bae2e
709. Author: Nick Krasnoff <nickkrasnoff@dyn-129-236-216-200.dyn.columbia.edu>
710. Date:   Sun Dec 9 22:48:06 2018 -0500
712. Fixed List creation and Makefiles now compile with debug info
714. commit 50bc7b2d7803366ccfc83daca30eb2b76fb97567
715. Author: Tim <pw2440@columbia.edu>
716. Date:   Sun Dec 9 20:50:06 2018 -0500
718. not fixed: list type, infinite loop when ./out.g
720. commit 968b79d189ac951c60d601a59dd82a921b7e8d3a
721. Author: Tim <pw2440@columbia.edu>
722. Date:   Sun Dec 9 20:15:25 2018 -0500
724. change push\_list **return** and type list in codegen
726. commit bd27ba7932eaed23ef4a0d25c2919c8bee01d137
727. Author: Nick Krasnoff <nickkrasnoff@dyn-129-236-216-200.dyn.columbia.edu>
728. Date:   Sun Dec 9 18:55:33 2018 -0500
730. Changed list.grp test **case**
732. commit 503c5be6f828f9cf9e56355984383b02110b2674
733. Author: Tim <pw2440@columbia.edu>
734. Date:   Sun Dec 9 18:20:00 2018 -0500
736. fixed typing of list in codegen
738. commit 2a051b0beb83bb4f96e00b398da3b0701c21f668
739. Author: Tim <pw2440@columbia.edu>
740. Date:   Thu Dec 6 20:12:48 2018 -0500
742. feat: list type in codegen
744. commit e4aea9d89fa75b8cc434b3eecf2900c7560de735
745. Merge: 7929b30 b2af8ec
746. Author: Tim <pw2440@columbia.edu>
747. Date:   Thu Dec 6 19:45:17 2018 -0500
749. merge conflict
751. commit 7929b30e76242e1140b1d2859fe690690d678ad6
752. Author: Tim <pw2440@columbia.edu>
753. Date:   Thu Dec 6 19:39:56 2018 -0500
755. codegen.ml
757. commit b2af8ec61ac437da815da5bc60be4e3e424bae89
758. Author: HyunBin Yoo <hy2506@columbia.edu>
759. Date:   Thu Dec 6 19:31:59 2018 -0500
761. missed types.h
763. commit 1c8877da6f30fa1f1ba0fdf248268001cf06a752
764. Merge: 9487ed3 b1115e0
765. Author: HyunBin Yoo <hy2506@columbia.edu>
766. Date:   Thu Dec 6 19:28:32 2018 -0500
768. Merge branch 'master' of https://github.com/jrkolsby/Grape
770. commit 9487ed3979f82ef89308b7af4165fb916d132aab
771. Author: HyunBin Yoo <hy2506@columbia.edu>
772. Date:   Thu Dec 6 19:28:26 2018 -0500
774. feat adding node and edge to graph
776. commit b1115e009cbf61e8b35fc806305ca0c5bdd850cf
777. Author: James Kolsby <jrkolsby@mac.com>
778. Date:   Thu Dec 6 19:17:07 2018 -0500
780. feat: add edge codegen
782. commit f9c2928214011aa6942e53d3cdb79a04f91bdc7b
783. Author: HyunBin Yoo <hy2506@columbia.edu>
784. Date:   Thu Dec 6 19:15:38 2018 -0500
786. forgot to push list.h
788. commit 4a9b8d5094d829f493fec33b59ff4f40190ae806
789. Merge: 09e1979 cac5f27
790. Author: HyunBin Yoo <hy2506@columbia.edu>
791. Date:   Thu Dec 6 19:12:36 2018 -0500
793. Merge branch 'master' of https://github.com/jrkolsby/Grape
795. commit 09e1979c307f97d114be5bb0768e69e9edd81bca
796. Author: HyunBin Yoo <hy2506@columbia.edu>
797. Date:   Thu Dec 6 19:12:31 2018 -0500
799. fixed errors
801. commit cac5f274d42440a1cf064b6c5e17a089e2835ec4
802. Author: James Kolsby <jrkolsby@mac.com>
803. Date:   Thu Dec 6 18:58:03 2018 -0500
805. feat: init\_graph
807. commit 4a35830d348072f72fe6d3283273dea17544bbee
808. Author: HyunBin Yoo <hy2506@columbia.edu>
809. Date:   Thu Dec 6 18:36:00 2018 -0500
811. feat: list implementation
813. commit fd9b22edfd070f8d7c42aea299a14911cf758db0
814. Merge: 9ddbb8b e80b9d7
815. Author: HyunBin Yoo <hy2506@columbia.edu>
816. Date:   Thu Dec 6 18:07:13 2018 -0500
818. Merge branch 'master' of https://github.com/jrkolsby/Grape
820. commit 9ddbb8b7ad6499c6fd40889e27482d0a146dcb45
821. Author: HyunBin Yoo <hy2506@columbia.edu>
822. Date:   Thu Dec 6 18:07:05 2018 -0500
824. feat: basic graph
826. commit e80b9d7a645c2b248f2e9b31999e9b89f3988a8a
827. Author: James Kolsby <jrkolsby@mac.com>
828. Date:   Thu Dec 6 17:58:33 2018 -0500
830. feat: node, edge, graph function calls
832. commit 1cd9dcc1f071abd3a862ca99489a7108f4b6e089
833. Author: James Kolsby <jrkolsby@mac.com>
834. Date:   Thu Dec 6 17:20:55 2018 -0500
836. feat: ID in graph
838. commit dd9389bfda52bd8d1d1787432ac75d833e50cd39
839. Author: Tim <pw2440@columbia.edu>
840. Date:   Thu Dec 6 17:16:52 2018 -0500
842. fixed: edge type
844. commit d00ba05578366d88f0ad3f565b46f80a1b1b40fe
845. Author: HyunBin Yoo <hy2506@columbia.edu>
846. Date:   Thu Dec 6 17:03:29 2018 -0500
848. fixed error in graph.c
850. commit 614f7f11a5d0c0838373aa9e1164afaf57bd4c89
851. Author: HyunBin Yoo <hy2506@columbia.edu>
852. Date:   Tue Dec 4 16:34:41 2018 -0500
854. feat: function prototypes **for** graph node value and edge
856. commit df1e0869cb9e8ec526139c18e76607883c8e8e12
857. Author: HyunBin Yoo <hy2506@columbia.edu>
858. Date:   Tue Dec 4 16:28:11 2018 -0500
860. feat: GraphInitNode
862. commit aa851773dbdb1b4694fd7cc2e88cf3374ce46062
863. Author: James Kolsby <jrkolsby@mac.com>
864. Date:   Tue Dec 4 01:10:37 2018 -0500
866. fix: migrated tests to dist
868. commit 0e988f9c2b1bcb6fc41d6393db8424b7c103b852
869. Author: James Kolsby <jrkolsby@mac.com>
870. Date:   Tue Dec 4 01:07:04 2018 -0500
872. fixed gitignore again
874. commit eabd7b2de2ee395acd50e116544bf4e6882f2532
875. Author: James Kolsby <jrkolsby@mac.com>
876. Date:   Tue Dec 4 01:01:32 2018 -0500
878. fix: run context
880. commit 1eddd80cb1a8232fcf044dd403c8ac1b42929ab5
881. Author: James Kolsby <jrkolsby@mac.com>
882. Date:   Tue Dec 4 00:57:08 2018 -0500
884. fixed untracked files
886. commit a68b5e4c4d8d0ed7d07e0db4b33fac1d517fb9b3
887. Author: James Kolsby <jrkolsby@mac.com>
888. Date:   Tue Dec 4 00:40:55 2018 -0500
890. feat: refactored stdlib
892. commit 6a3253e9c7bc4850752af4c78934f37ce634b59a
893. Author: James Kolsby <jrkolsby@mac.com>
894. Date:   Mon Dec 3 23:46:11 2018 -0500
896. fix: makefile
898. commit 045763eea181d3652325d7fa9abb1f5f32c7380b
899. Author: James Kolsby <jrkolsby@mac.com>
900. Date:   Mon Dec 3 23:43:33 2018 -0500
902. feat: dist refactor
904. commit 5073fdec40ab293812ae096efb99152fde13016f
905. Author: James <James>
906. Date:   Mon Dec 3 23:50:31 2018 +0000
908. fix: link tests to c library
910. commit 69c3c78d306c713bee8c568e1a2536c4c9f0cf49
911. Author: James <James>
912. Date:   Mon Dec 3 23:39:17 2018 +0000
914. feat: linking
916. commit b7ff82ac6aaad72df8a8461a3633a4ab9c6d776a
917. Author: James <James>
918. Date:   Mon Dec 3 22:04:11 2018 +0000
920. feat: node\_init
922. commit 90a5c2b649c4394f0c8ae2c7bcc81aae552b3cae
923. Author: James Kolsby <jrkolsby@mac.com>
924. Date:   Mon Dec 3 15:08:37 2018 -0500
926. feat: refactor README
928. commit 8db9bd11be025cfa3b548708ea5287056d128ec1
929. Author: James Kolsby <jrkolsby@mac.com>
930. Date:   Mon Dec 3 15:01:16 2018 -0500
932. fix: typos and merlin
934. commit a269ba275fed3bd4da807c1521d25e8dbc4057b2
935. Author: HyunBin Yoo <hy2506@columbia.edu>
936. Date:   Mon Dec 3 03:42:11 2018 -0500
938. feat: implemented leaves, adjacent in C
940. commit c40793a4907705fe02537aba97d50bc70a4dbeb8
941. Author: HyunBin Yoo <hy2506@columbia.edu>
942. Date:   Mon Dec 3 03:34:49 2018 -0500
944. feat implemented graph functions in C
946. commit 16158acf45e8dc6c635333c6ab06b1efc00b1c25
947. Author: Nick Krasnoff <nsk2144@columbia.edu>
948. Date:   Sat Dec 1 15:40:15 2018 -0500
950. Semantically checked Graphs
952. commit 1e29650ecb31b444c64a40eec0d1dd6c28e9bf61
953. Author: Nick Krasnoff <nsk2144@columbia.edu>
954. Date:   Sat Dec 1 15:18:23 2018 -0500
956. Semant **for** Graph, Assign tries **int** = Node<Int>
958. commit 48eb59e52137836735b1525b23857984eaa0a612
959. Author: Tim <pw2440@columbia.edu>
960. Date:   Sat Dec 1 00:44:15 2018 -0500
962. Fix(undone): parser Graphlit order fixed, Graph in semant bad
964. commit 0b2d1ba16a47ab441cb973f0ad9b00ca9c8c5579
965. Author: Tim <pw2440@columbia.edu>
966. Date:   Fri Nov 30 20:31:55 2018 -0500
968. fixed: edge **case** **for** graph in semant
970. commit ece49b22678e5b72f89183fc4b467ba1c197bdd5
971. Author: Tim <pw2440@columbia.edu>
972. Date:   Fri Nov 30 20:17:10 2018 -0500
974. feat: check edge **case** in semant
976. commit a04e707ea063f9b9a3ae6185384a835f8337bd74
977. Merge: a3e4427 16a08b2
978. Author: Tim <pw2440@columbia.edu>
979. Date:   Fri Nov 30 19:39:08 2018 -0500
981. Merge branch 'master' of https://github.com/jrkolsby/Grape
983. commit 16a08b2d043cc4d6efc9421c4adcd8a3bcb6f41d
984. Author: Nick Krasnoff <nsk2144@columbia.edu>
985. Date:   Fri Nov 30 18:51:14 2018 -0500
987. Compile grape c file
989. commit a3e4427a55f78b975030ada3e93ca5e0eb6cba43
990. Merge: 39f6156 4d5a12c
991. Author: Tim <pw2440@columbia.edu>
992. Date:   Fri Nov 30 18:26:18 2018 -0500
994. Merge branch 'master' of https://github.com/jrkolsby/Grape
996. commit 4d5a12cfbd327d402f4bf3e803cedf295da361fa
997. Author: Nick Krasnoff <nsk2144@columbia.edu>
998. Date:   Fri Nov 30 18:25:14 2018 -0500
1000. Changed semant built in decls format
1002. commit a818e96076c29be91160938980828560f2fa8c6f
1003. Author: Nick Krasnoff <nsk2144@columbia.edu>
1004. Date:   Fri Nov 30 18:17:41 2018 -0500
1006. Added Graph in Semant: now compiles
1008. commit 39f6156677d58bf7c9a2e3c4a170f3ded0e2f447
1009. Merge: 435bec7 7dc1a7d
1010. Author: Tim <pw2440@columbia.edu>
1011. Date:   Fri Nov 30 18:15:19 2018 -0500
1013. Merge branch 'master' of https://github.com/jrkolsby/Grape
1015. commit 435bec746d5f29693e95b66008e106eeec0b3c43
1016. Author: Tim <pw2440@columbia.edu>
1017. Date:   Fri Nov 30 18:15:11 2018 -0500
1019. feat: add to codegen and grape.c
1021. commit 7dc1a7db4b9dc9eebfe42f8737eab92e57eb12d9
1022. Author: Nick Krasnoff <nsk2144@columbia.edu>
1023. Date:   Fri Nov 30 18:13:46 2018 -0500
1025. Reremoved dict
1027. commit e5fbd687595506dd7d7ed24a62442f62e4df5d09
1028. Author: James Kolsby <jrkolsby@mac.com>
1029. Date:   Fri Nov 30 18:08:08 2018 -0500
1031. temp
1033. commit 311457d7568ca03de547e9fced57db0a1180ecce
1034. Author: Nick Krasnoff <nsk2144@columbia.edu>
1035. Date:   Fri Nov 30 17:52:51 2018 -0500
1037. Removed colon from scanner
1039. commit 645c41bdec02a86256db20edf8c72bef8e748fdc
1040. Merge: c4f8050 e04ce99
1041. Author: Nick Krasnoff <nsk2144@columbia.edu>
1042. Date:   Fri Nov 30 17:05:01 2018 -0500
1044. Merge branch 'master' of https://github.com/jrkolsby/Grape
1046. commit c4f8050eeba11e492e1366b7769c38c61949acbb
1047. Author: Nick Krasnoff <nsk2144@columbia.edu>
1048. Date:   Fri Nov 30 17:03:45 2018 -0500
1050. Removed Dicts
1052. commit e04ce99389f67fce7858fd83a622f3f3501dffcf
1053. Author: Tim <pw2440@columbia.edu>
1054. Date:   Thu Nov 29 20:19:23 2018 -0500
1056. added SList and SNode type
1058. commit f1758505bb9e89921beb808b382e7a10f31bcccc
1059. Author: Tim <pw2440@columbia.edu>
1060. Date:   Thu Nov 29 18:04:20 2018 -0500
1062. fix: reformatted c library, and add to Readme
1064. commit bde9061652c7878a7de39e4571d3b040d5f2bf3b
1065. Author: HyunBin Yoo <hy2506@columbia.edu>
1066. Date:   Thu Nov 29 02:02:36 2018 -0500
1068. revised README
1070. commit c9490fc65105546117f1b2329f6df1082a057d31
1071. Author: HyunBin Yoo <hy2506@columbia.edu>
1072. Date:   Thu Nov 29 01:57:20 2018 -0500
1074. feat: added graph function **for** root
1076. commit c827b06c4581961438a99526ce9dc393e6bd587c
1077. Author: HyunBin Yoo <hy2506@columbia.edu>
1078. Date:   Thu Nov 29 01:54:43 2018 -0500
1080. feat: added function prototypes **for** graph funcitons
1082. commit 4be9e311a23a7e6ab32d3c92030d14b6ddf25972
1083. Author: HyunBin Yoo <hy2506@columbia.edu>
1084. Date:   Thu Nov 29 01:31:14 2018 -0500
1086. feat: compilable grape.c
1088. commit 4ffa89a4b343bb6071146229772ca89e3ea4b936
1089. Author: HyunBin Yoo <hy2506@columbia.edu>
1090. Date:   Thu Nov 29 01:26:45 2018 -0500
1092. feat: added structs **for** graph implementation
1094. commit 2716146ac03d99e07f68c92e8c35a2393d46a20b
1095. Author: HyunBin Yoo <hy2506@columbia.edu>
1096. Date:   Thu Nov 29 01:19:10 2018 -0500
1098. feat: copy funtion in C
1100. commit 4195544beee0191cec8d9d6366fd4afedeb76abe
1101. Author: HyunBin Yoo <hy2506@columbia.edu>
1102. Date:   Thu Nov 29 00:56:17 2018 -0500
1104. fixed a typo in grape.c
1106. commit 31d3b5ce6803507af08308e381732f76574c1b25
1107. Author: HyunBin Yoo <hy2506@columbia.edu>
1108. Date:   Thu Nov 29 00:55:07 2018 -0500
1110. fixed READMD
1112. commit a484c66fd4570fe322cbba35613ce9dfdabc721d
1113. Merge: 2d3da7d e137a9c
1114. Author: HyunBin Yoo <hy2506@columbia.edu>
1115. Date:   Wed Nov 28 21:57:42 2018 -0500
1117. feat: list copy in C
1119. commit 2d3da7dfe10282358be3e591a2cde9570768b2c5
1120. Author: HyunBin Yoo <hy2506@columbia.edu>
1121. Date:   Wed Nov 28 21:56:32 2018 -0500
1123. feat: list copy in C
1125. commit e137a9c384a18b1b4a4dcd8e2111f74d7dad830b
1126. Merge: 69a34e7 6616339
1127. Author: Tim <pw2440@columbia.edu>
1128. Date:   Wed Nov 28 21:55:44 2018 -0500
1130. Merge branch 'master' of https://github.com/jrkolsby/Grape
1132. commit 69a34e70b30f9f31d9f8958305b7305125491124
1133. Author: Tim <pw2440@columbia.edu>
1134. Date:   Wed Nov 28 21:55:32 2018 -0500
1136. feat: list functions in c
1138. commit 6616339fd8213c47fcd340ff96a2128ffa2d2a9f
1139. Author: HyunBin Yoo <hy2506@columbia.edu>
1140. Date:   Wed Nov 28 19:51:24 2018 -0500
1142. removed dictionary
1144. commit 56094f7d90c72fe5e9b92e256fc650e52b59ac17
1145. Author: HyunBin Yoo <hy2506@columbia.edu>
1146. Date:   Wed Nov 28 19:21:12 2018 -0500
1148. combined two c files
1150. commit 0df6cb861915cef930fda5dff2a97fdec9769cf8
1151. Author: HyunBin Yoo <hy2506@columbia.edu>
1152. Date:   Wed Nov 28 19:04:08 2018 -0500
1154. git removed
1156. commit b5de2fe811ab0137ad1172fe23c08f56575ab12d
1157. Author: Nick Krasnoff <nsk2144@columbia.edu>
1158. Date:   Mon Nov 26 17:16:41 2018 -0500
1160. Graph types pretty print
1162. commit 245e61df8428b111c5c2eb9f5b73122dacb7cdb0
1163. Author: Nick Krasnoff <nsk2144@columbia.edu>
1164. Date:   Mon Nov 26 17:11:14 2018 -0500
1166. Graph types in ast/parser
1168. commit 1a272b2dacff55af02150b12abe809f93be5223b
1169. Author: HyunBin Yoo <hy2506@columbia.edu>
1170. Date:   Mon Nov 26 02:32:01 2018 -0500
1172. added comment in list library
1174. commit 62d48687173d93a72ddad154f43939398dedd9bc
1175. Author: HyunBin Yoo <hy2506@columbia.edu>
1176. Date:   Mon Nov 26 02:30:25 2018 -0500
1178. renamed two C library files
1180. commit 84f5fbd52c99ed54b829a840ee3211e22d69cd04
1181. Author: HyunBin Yoo <hy2506@columbia.edu>
1182. Date:   Mon Nov 26 02:26:17 2018 -0500
1184. found **this** implementation of dictionary in C
1186. commit 7fecc4b037e1328fe1a96ca957036276235e50b2
1187. Author: HyunBin Yoo <hy2506@columbia.edu>
1188. Date:   Mon Nov 26 02:21:00 2018 -0500
1190. added reverse function
1192. commit bde50e99986f854d1ad400a7a543a69b52d77de7
1193. Author: HyunBin Yoo <hy2506@columbia.edu>
1194. Date:   Mon Nov 26 02:15:49 2018 -0500
1196. C library **for** list
1198. commit 02fde4234617ab92ea2b2ef1eadca870310385a4
1199. Author: HyunBin Yoo <hy2506@columbia.edu>
1200. Date:   Mon Nov 26 01:59:32 2018 -0500
1202. graphlit
1204. commit 2ae22a99d0913a4653b03a2bd1862cc7c1631403
1205. Author: James <James>
1206. Date:   Thu Nov 22 17:11:51 2018 +0000
1208. feat: function tests
1210. commit ffc65f22caa8f392a84fafdef7ad0c7d89af5b55
1211. Author: James <James>
1212. Date:   Tue Nov 20 20:34:50 2018 +0000
1214. fix: testing suite
1216. commit 27d8924bbba7472c903205d63621c7a9450dab3e
1217. Author: Tim <pw2440@columbia.edu>
1218. Date:   Sun Nov 18 17:48:44 2018 -0500
1220. fixed: parser.mly semant.ml in dictlit
1222. commit 2a9dd71a47ff8d4ecb54c18cfbd7d715c793a7c5
1223. Author: Tim <pw2440@columbia.edu>
1224. Date:   Sun Nov 18 15:09:38 2018 -0500
1226. fixed some ast, sast stuff
1228. commit bc0d88017982d9483cdd0f1e2093498582e1c6e8
1229. Author: Tim <pw2440@columbia.edu>
1230. Date:   Sun Nov 18 11:07:22 2018 -0500
1232. fixed: parser and ast/sast
1234. commit 34ead86ce5bdb97e8999ab9fb8705dd1e4f837f5
1235. Author: James <James>
1236. Date:   Thu Nov 15 04:51:00 2018 +0000
1238. feat: broken test script
1240. commit 2e334c63a3da1f0083092afff58b1ab6bf1e0837
1241. Author: James <James>
1242. Date:   Thu Nov 15 03:38:46 2018 +0000
1244. feat: GRAPE V0
1246. commit 99902edde181baef17a670de3b9aeb8a70d82dcd
1247. Author: James <James>
1248. Date:   Thu Nov 15 02:01:53 2018 +0000
1250. feat: parser
1252. commit 6a7fee63db8b9d1b8a25472f5fb15b20337f83fe
1253. Author: James <James>
1254. Date:   Thu Nov 15 01:16:23 2018 +0000
1256. fixes
1258. commit 63244fb80011744dd1c8dc7c3dbea914ce67fc81
1259. Author: HyunBin Yoo <hy2506@columbia.edu>
1260. Date:   Wed Nov 14 20:38:02 2018 -0500
1262. fixed: Failure
1264. commit b984e5c3a05d63d1421e3347fd018d1e693b26f3
1265. Merge: 25108b3 e858aa9
1266. Author: Tim <pw2440@columbia.edu>
1267. Date:   Wed Nov 14 20:25:36 2018 -0500
1269. Merge branch 'master' of https://github.com/jrkolsby/Grape
1271. commit 25108b3b6e0b8642f14458cf0c68d9169f405c97
1272. Author: Tim <pw2440@columbia.edu>
1273. Date:   Wed Nov 14 20:25:33 2018 -0500
1275. fixed: semant error
1277. commit e858aa9f4dd799779b3dd190b8ea5fb0b456313c
1278. Merge: 5111110 72aa61d
1279. Author: HyunBin Yoo <hy2506@columbia.edu>
1280. Date:   Wed Nov 14 20:24:15 2018 -0500
1282. Merge branch 'master' of https://github.com/jrkolsby/Grape
1284. commit 51111107815509f2f6a05f8c04f0ad481f0f0016
1285. Author: HyunBin Yoo <hy2506@columbia.edu>
1286. Date:   Wed Nov 14 20:23:56 2018 -0500
1288. fixed: raise error **for** unimplemented
1290. commit 72aa61d7a10e9c7acd2587cbae902af74d001130
1291. Author: Nick Krasnoff <nsk2144@columbia.edu>
1292. Date:   Wed Nov 14 20:14:59 2018 -0500
1294. feat: Declare and Assign only as Statement
1296. commit 3b1246b98d5411b34d18406e4345bdad4f4c368a
1297. Author: James Kolsby <jrkolsby@mac.com>
1298. Date:   Wed Nov 14 19:47:47 2018 -0500
1300. fix: Node types
1302. commit a0ea84d68539402a093ca57d4e367fb08a6be53b
1303. Author: Tim <pw2440@columbia.edu>
1304. Date:   Wed Nov 14 19:43:21 2018 -0500
1306. fixed: script
1308. commit 07bdd05cf357f5ce11bb74cf2928879092e73a68
1309. Author: James Kolsby <jrkolsby@mac.com>
1310. Date:   Wed Nov 14 19:30:28 2018 -0500
1312. fix: scripts
1314. commit 35ea92ad3977b77fa555d3ac02c2b62f32108100
1315. Author: James Kolsby <jrkolsby@mac.com>
1316. Date:   Wed Nov 14 18:47:27 2018 -0500
1318. fix: run dev and init
1320. commit 36f855499d2a3b9a7718b3e5c4b9da9b73a55c6f
1321. Merge: 501c75d 7e1d748
1322. Author: Nick Krasnoff <nsk2144@columbia.edu>
1323. Date:   Wed Nov 14 15:43:19 2018 -0500
1325. Merge branch 'master' of https://github.com/jrkolsby/PLTProject
1327. commit 501c75dd5d03e231edc40ff4b90e9e2563d7e028
1328. Author: Nick Krasnoff <nsk2144@columbia.edu>
1329. Date:   Wed Nov 14 15:43:03 2018 -0500
1331. scanner.mll: Removed IN
1333. commit 01d2d8fcdd0adab69467d9603f5c1152e1d66740
1334. Author: Nick Krasnoff <nsk2144@columbia.edu>
1335. Date:   Wed Nov 14 15:37:57 2018 -0500
1337. parser.mly: Added DQUOT
1339. commit 7e1d748aaa011b4e5a234f076247965dfbfdc997
1340. Author: James Kolsby <jrkolsby@mac.com>
1341. Date:   Wed Nov 14 03:21:49 2018 -0500
1343. fix: codegen coverage
1345. commit 0847011966717881d4ebd444aa7fd75ab531ccd9
1346. Author: James Kolsby <jrkolsby@mac.com>
1347. Date:   Wed Nov 14 03:21:05 2018 -0500
1349. infra: ./run command
1351. commit db0730f17611e85dd35797a8fc4bfe77ab08b32c
1352. Author: HyunBin Yoo <hy2506@columbia.edu>
1353. Date:   Wed Nov 14 01:45:24 2018 -0500
1355. removed unnecessary files
1357. commit b8613273c96f06f0f9ad1ab986ecf234a6a5b43a
1358. Author: Tim <pw2440@columbia.edu>
1359. Date:   Tue Nov 13 23:39:06 2018 -0500
1361. feat: dict and possibly graph type checking
1363. commit 42daf57d707aec9be61e1a9f4e57ceee84edcceb
1364. Author: Tim <pw2440@columbia.edu>
1365. Date:   Tue Nov 13 23:40:23 2018 -0500
1367. fixed: semant merge conflict
1369. commit 0f080a50b1a44720349d1605ec4568c22a175eef
1370. Author: HyunBin Yoo <hy2506@columbia.edu>
1371. Date:   Tue Nov 13 23:34:39 2018 -0500
1373. feat: implemented each
1375. commit ea5193bf1415a3c61ac0835a82d30755f35054db
1376. Author: James Kolsby <jrkolsby@mac.com>
1377. Date:   Wed Nov 14 03:37:32 2018 +0000
1379. temp
1381. commit 6677fd494150251409ff15d795b51131267ce228
1382. Author: James Kolsby <jrkolsby@mac.com>
1383. Date:   Wed Nov 14 03:37:07 2018 +0000
1385. feat: update makefile
1387. commit 4da6e0019e60957ea86d967a75f6ed1d3327b275
1388. Author: Tim <pw2440@columbia.edu>
1389. Date:   Tue Nov 13 22:36:26 2018 -0500
1391. feat: type checking listlit
1393. commit 6c46b2a33cd5e3a3ec11a100deaa2213fa8116ba
1394. Author: HyunBin Yoo <hy2506@columbia.edu>
1395. Date:   Tue Nov 13 22:35:31 2018 -0500
1397. fixed: Edgelit in semant.ml
1399. commit c269f2fcb7eb4b9adb5ed019a05097947e066e87
1400. Author: Tim <pw2440@columbia.edu>
1401. Date:   Tue Nov 13 22:07:16 2018 -0500
1403. fixed: list type func
1405. commit e049c20c6411fc5899848112143b869403a99482
1406. Author: Tim <pw2440@columbia.edu>
1407. Date:   Tue Nov 13 21:58:14 2018 -0500
1409. working: semant list type checking
1411. commit ecda99177b8f408a845dea33ecb9158ab6fa0692
1412. Author: James Kolsby <jrkolsby@mac.com>
1413. Date:   Tue Nov 13 21:06:10 2018 -0500
1415. feat: list typechecking
1417. commit ca0e6c258d4061dcd5732f417315b49fd1804df1
1418. Merge: 25d48bb 1a6f4b1
1419. Author: Nick Krasnoff <nsk2144@columbia.edu>
1420. Date:   Tue Nov 13 20:10:13 2018 -0500
1422. Merge branch 'master' of https://github.com/jrkolsby/PLTProject
1424. commit 25d48bb5ecb6581af7efd80583697036a347178f
1425. Author: Nick Krasnoff <nsk2144@columbia.edu>
1426. Date:   Tue Nov 13 20:10:08 2018 -0500
1428. prints: String printing in codegen.ml
1430. commit 1a6f4b10a8e852df206ffcfe1f085091ff202e0f
1431. Author: Tim <pw2440@columbia.edu>
1432. Date:   Tue Nov 13 20:09:40 2018 -0500
1434. fixed ast.ml has no typed graph
1436. commit b42ed0a3f48ba0e3deb60882b621439921f7cd20
1437. Merge: dc11deb 87602e1
1438. Author: Tim <pw2440@columbia.edu>
1439. Date:   Tue Nov 13 19:43:46 2018 -0500
1441. fixed: typing
1443. commit dc11debc31247af98b7a9b8f094978458cfa528c
1444. Author: Tim <pw2440@columbia.edu>
1445. Date:   Tue Nov 13 19:41:43 2018 -0500
1447. fixed: semant changed
1449. commit 87602e11eb5eeea138ac600be8d6f29dac30b67d
1450. Author: James <jrkolsby@mac.com>
1451. Date:   Wed Nov 14 00:39:13 2018 +0000
1453. fix: Node semantic checking
1455. commit ff7ea32fbea379be5fa5f1514b791b4c09e1eced
1456. Merge: 8a2eb98 0832492
1457. Author: Nick Krasnoff <nsk2144@columbia.edu>
1458. Date:   Tue Nov 13 19:09:51 2018 -0500
1460. Merge branch 'master' of https://github.com/jrkolsby/PLTProject
1462. commit 8a2eb988f4f272a0bf2d4018cef1af22d97020f6
1463. Author: Nick Krasnoff <nsk2144@columbia.edu>
1464. Date:   Tue Nov 13 19:09:43 2018 -0500
1466. Updated docker env scripts
1468. commit 08324921c7f99b3e5ce3d1d18482788f11c9f2f0
1469. Author: James Kolsby <jrkolsby@mac.com>
1470. Date:   Tue Nov 13 18:15:32 2018 -0500
1472. refactor: **new** tests
1474. commit 0058ad43c4b42498acd86feaeeebb0d64c86de60
1475. Author: Tim <pw2440@columbia.edu>
1476. Date:   Tue Nov 13 17:59:45 2018 -0500
1478. feat: add typ
1480. commit 7e312c945ec1938993962755968a31f9061e19d3
1481. Author: James Kolsby <jrkolsby@mac.com>
1482. Date:   Tue Nov 13 17:55:31 2018 -0500
1484. feat: added string\_of\_typ
1486. commit 2ae87b87f55cfa0951b0fc7adb7126919a6f4906
1487. Author: James Kolsby <jrkolsby@mac.com>
1488. Date:   Tue Nov 13 17:45:25 2018 -0500
1490. fix: pretty printing
1492. commit 1a250fd6f9b28e6bb5897e3e6581720d14d547a4
1493. Author: Tim <pw2440@columbia.edu>
1494. Date:   Tue Nov 13 17:43:24 2018 -0500
1496. fixed: rid of Templates
1498. commit bfb6d72411474267fce27cc055570f7ed18de5fd
1499. Author: Tim <pw2440@columbia.edu>
1500. Date:   Tue Nov 13 17:28:13 2018 -0500
1502. fix: add stuff to pretty print in sast
1504. commit ea84a41ff829ac9c1d1f209e9ef248ca0337d972
1505. Author: Tim <pw2440@columbia.edu>
1506. Date:   Tue Nov 13 15:39:11 2018 -0500
1508. feat: update all existing data types in ast
1510. commit f366115ae1746de3efebb17b212c87d92b4884d1
1511. Author: Nick Krasnoff <nsk2144@columbia.edu>
1512. Date:   Mon Nov 12 21:55:13 2018 -0500
1514. Added String type to codegen
1516. commit 64015b9976a9aea8442072101c483dc5b1607ceb
1517. Author: Tim <pw2440@columbia.edu>
1518. Date:   Tue Nov 6 23:00:04 2018 -0500
1520. fixed: typo in ast.ml
1522. commit 9fac84429ca2763c116fe9e0cba036429c655b0a
1523. Merge: b0e900b 50e0b2d
1524. Author: Tim <pw2440@columbia.edu>
1525. Date:   Tue Nov 6 16:42:57 2018 -0500
1527. fixed: typo in mehir scripts, clear all conflicts
1529. commit b0e900bd71a7e8ca6249caa5aa5bdba84a88f3e2
1530. Author: Tim <pw2440@columbia.edu>
1531. Date:   Tue Nov 6 16:41:42 2018 -0500
1533. fixed: typo in mehir scripts, clear all conflicts
1535. commit 50e0b2d43d2baad1a8ecf64f888f4d63fe66c496
1536. Author: James Kolsby <jrkolsby@mac.com>
1537. Date:   Tue Nov 6 16:28:38 2018 -0500
1539. refactor: SFloatLit and SIntLit
1541. commit 22759b8da1621c97414f4af0efdcf65105ead9bf
1542. Merge: 6f5bbfa a740064
1543. Author: Tim <pw2440@columbia.edu>
1544. Date:   Mon Nov 5 16:03:36 2018 -0500
1546. Merge branch 'master' of https://github.com/jrkolsby/Grape
1548. commit 6f5bbfa4a853b868cfad08a5f37462d9ead5f8e4
1549. Author: Tim <pw2440@columbia.edu>
1550. Date:   Mon Nov 5 16:02:18 2018 -0500
1552. fixed: edge
1554. commit a740064d6778244f76293ea6d752a0dda54da9b0
1555. Author: James Kolsby <jrkolsby@mac.com>
1556. Date:   Mon Nov 5 16:00:22 2018 -0500
1558. feat: README changes
1560. commit 58bceb36659855be7fc730df18979f5a19da244a
1561. Author: HyunBin Yoo <hy2506@columbia.edu>
1562. Date:   Mon Nov 5 15:40:21 2018 -0500
1564. completed function
1566. commit ad8f1a47a070cdfdf40c8d681d70073c5e5c84dd
1567. Author: HyunBin Yoo <hy2506@columbia.edu>
1568. Date:   Mon Nov 5 15:29:30 2018 -0500
1570. changed function declaration
1572. commit 398dcf2340de57141c66a0cb75f96b0f8a7b6d75
1573. Merge: 9348d40 016c3d0
1574. Author: Tim <pw2440@columbia.edu>
1575. Date:   Mon Nov 5 15:26:15 2018 -0500
1577. Merge branch 'master' of https://github.com/jrkolsby/Grape
1579. commit 9348d4031ce705c653609fe4b01f02139d1c8536
1580. Author: Tim <pw2440@columbia.edu>
1581. Date:   Mon Nov 5 15:26:11 2018 -0500
1583. fixed: conflicts with dean
1585. commit 016c3d09941fc00ef717c9329aa8ee3807d62dfb
1586. Author: James Kolsby <jrkolsby@mac.com>
1587. Date:   Mon Nov 5 14:18:01 2018 -0500
1589. refactor: removed .sh from scripts
1591. commit ced01eed1da4c0b3a4df20184fe5c30a8cc042e0
1592. Merge: 113aba2 68815db
1593. Author: HyunBin Yoo <hy2506@columbia.edu>
1594. Date:   Mon Nov 5 14:17:48 2018 -0500
1596. Merge branch 'master' of https://github.com/jrkolsby/Grape
1598. commit 113aba234161b1b5f4a6eec55610f56ac8d0a9e0
1599. Merge: 153318c 2018235
1600. Author: HyunBin Yoo <hy2506@columbia.edu>
1601. Date:   Mon Nov 5 14:17:42 2018 -0500
1603. changed
1605. commit 68815db15f704dc64aacbf0e6ad98a28d513bcd5
1606. Author: James Kolsby <jrkolsby@mac.com>
1607. Date:   Mon Nov 5 14:16:40 2018 -0500
1609. refactor: moved menhir script
1611. commit 22e320054db231dcc3ca4b1d804a36f29e555959
1612. Author: James Kolsby <jrkolsby@mac.com>
1613. Date:   Mon Nov 5 14:14:15 2018 -0500
1615. feat: decimal syntax
1617. commit f16062787af342f0d426635eac48021c922d1408
1618. Author: James Kolsby <jrkolsby@mac.com>
1619. Date:   Mon Nov 5 14:09:33 2018 -0500
1621. feat: floats
1623. commit 56697d459c974e97e479c81241c2ac08dc468256
1624. Merge: 8718b98 c86f8b5
1625. Author: Tim <pw2440@columbia.edu>
1626. Date:   Mon Nov 5 14:03:37 2018 -0500
1628. Merge branch 'master' of https://github.com/jrkolsby/Grape
1630. commit 8718b98d282e5bb8b82c48a8fc4e084c43312c6f
1631. Merge: 60fc38e 51d823b
1632. Author: Tim <pw2440@columbia.edu>
1633. Date:   Mon Nov 5 14:03:32 2018 -0500
1635. fixed: expr\_opt in stmt
1637. commit c86f8b53a1371593cccfcec325cf312544277c85
1638. Author: James Kolsby <jrkolsby@mac.com>
1639. Date:   Mon Nov 5 13:58:34 2018 -0500
1641. feat: make menhir
1643. commit 60fc38e55dafb39b27d9d43260dc580b5e42ce3e
1644. Author: Tim <pw2440@columbia.edu>
1645. Date:   Mon Nov 5 14:02:03 2018 -0500
1647. fixed expr\_opt in parser.mly
1649. commit 51d823b35579f9b00adeb617586da5b4dbc01602
1650. Merge: 5e4fcdb fcb85a8
1651. Author: Nick Krasnoff <nsk2144@columbia.edu>
1652. Date:   Mon Nov 5 14:01:05 2018 -0500
1654. Merge branch 'master' of https://github.com/jrkolsby/PLTProject
1656. commit 5e4fcdb6c446c10bf97d68c0d47ce35f34090d5d
1657. Merge: de6afbd 2018235
1658. Author: Nick Krasnoff <nsk2144@columbia.edu>
1659. Date:   Mon Nov 5 14:01:00 2018 -0500
1661. merge
1663. commit fcb85a830f775b97844d1c251816ef923b32f8db
1664. Author: James Kolsby <jrkolsby@mac.com>
1665. Date:   Mon Nov 5 13:58:34 2018 -0500
1667. fix: make parser
1669. commit de6afbdfa2fd09b830833dda9f2c78f0245e1f4d
1670. Author: Nick Krasnoff <nsk2144@columbia.edu>
1671. Date:   Mon Nov 5 13:57:29 2018 -0500
1673. Dict in parser/ast
1675. commit 153318c1cdfc1bdb6477eab90f5fb3d8b623d8a3
1676. Author: HyunBin Yoo <hy2506@columbia.edu>
1677. Date:   Mon Nov 5 13:45:48 2018 -0500
1679. changed
1681. commit 2018235388103c2cb9685786da9607842fe4ba81
1682. Author: James Kolsby <jrkolsby@mac.com>
1683. Date:   Mon Nov 5 13:43:20 2018 -0500
1685. feat: SAST.ml
1687. commit d5efc674fb28ed90c817ca4531b0068b83254c3b
1688. Author: Tim <pw2440@columbia.edu>
1689. Date:   Mon Nov 5 12:36:46 2018 -0500
1691. fixed: typo in ast.ml
1693. commit dd4c54151bac942576851dc94f0c190efb9a1512
1694. Author: James Kolsby <jrkolsby@mac.com>
1695. Date:   Mon Nov 5 12:19:18 2018 -0500
1697. feat: documentation
1699. commit 4de7d49b9a915e9d485ef27ff003f8bd30f9c8db
1700. Author: James Kolsby <jrkolsby@mac.com>
1701. Date:   Mon Nov 5 12:16:11 2018 -0500
1703. fix: Makefile compilation (broken)
1705. commit c7465cfd8e27a4d9985a2155b9ac8b0baaec6b77
1706. Author: Tim <pw2440@columbia.edu>
1707. Date:   Mon Nov 5 11:04:06 2018 -0500
1709. feat: added giraph whole folder **for** reference
1711. commit b0b3d9cf1b2258893469f4aad5e8312b89822f49
1712. Author: Tim <pw2440@columbia.edu>
1713. Date:   Mon Nov 5 10:37:50 2018 -0500
1715. feat: add Exp, Float, Dist to ast, and fixed typo
1717. commit 05f988068fd5718b826f55952b9fa74eba868f84
1718. Author: Tim <pw2440@columbia.edu>
1719. Date:   Mon Nov 5 10:29:33 2018 -0500
1721. feat: added AMP syntax
1723. commit 43e2f1507c5d7e43e5c15ae29a822e6c90f0c78d
1724. Author: Tim <pw2440@columbia.edu>
1725. Date:   Sun Nov 4 19:09:05 2018 -0500
1727. added: menhir shellscript
1729. commit cbcb18f350f1654483a7b2af2578cdd23fc16cc6
1730. Author: Tim <pw2440@columbia.edu>
1731. Date:   Sun Nov 4 15:33:06 2018 -0500
1733. fix: edge declaration is now with underscore
1735. commit c03b89e1bba64a9521f6bea1651d2aba3cf35eff
1736. Author: Tim <pw2440@columbia.edu>
1737. Date:   Sun Nov 4 14:48:01 2018 -0500
1739. fix typo in parser.mly and update README.md
1741. commit a0d8407d47dd32d8d450b332e0ccf6586048b3ca
1742. Author: Tim <pw2440@columbia.edu>
1743. Date:   Sun Nov 4 11:10:14 2018 -0500
1745. feat: add giraph to git
1747. commit 055279e828c0fb3c5fa2058fc6678da2b7c73ee8
1748. Author: Tim <pw2440@columbia.edu>
1749. Date:   Fri Nov 2 17:24:06 2018 -0400
1751. feat: add script to attach container
1753. commit 2cd69ea60d3419d876cf71f5f2970e18747321e7
1754. Author: James Kolsby <jrkolsby@mac.com>
1755. Date:   Fri Nov 2 16:54:01 2018 -0400
1757. fix: Makefile
1759. commit 85be8a3551d8d7a458e5f739cf0d49d82a52cab9
1760. Author: Tim <pw2440@columbia.edu>
1761. Date:   Fri Nov 2 16:17:57 2018 -0400
1763. thinking: edge **template** not working
1765. commit c46f982ca16ddfd7227550b5da3370907e8baa23
1766. Author: James Kolsby <jrkolsby@mac.com>
1767. Date:   Fri Nov 2 10:22:12 2018 -0400
1769. feat: README changes
1771. commit ab57a5fc0042517f21b27cf1ea02454f7ad9b9e1
1772. Author: James Kolsby <jrkolsby@mac.com>
1773. Date:   Thu Nov 1 19:17:58 2018 -0400
1775. feat: codegen, semant, grape
1777. commit 1dc100fd81db53f3ea2873610c099914b0fe3d4c
1778. Author: James Kolsby <jrkolsby@mac.com>
1779. Date:   Thu Nov 1 19:04:32 2018 -0400
1781. refactor: scripts folder
1783. commit f285808ce5ff9308dd9cc38cafba50bd87dac5c1
1784. Author: James Kolsby <jrkolsby@mac.com>
1785. Date:   Thu Nov 1 19:02:53 2018 -0400
1787. refactor: docs folder
1789. commit 3c49921a28d14e4cea7d539a9d40a2e3cc72eac0
1790. Author: James Kolsby <jrkolsby@mac.com>
1791. Date:   Thu Nov 1 18:43:40 2018 -0400
1793. feat: Added dev environment
1795. commit ea92f7ffd8bfca0a7f203d06424e0f01c5875819
1796. Author: Tim <pw2440@columbia.edu>
1797. Date:   Thu Nov 1 17:37:23 2018 -0400
1799. feat: list expr
1801. commit 7580199d7029a906f66c49c80108009328f30d69
1802. Merge: dce1b9e baee0fc
1803. Author: Tim <pw2440@columbia.edu>
1804. Date:   Thu Nov 1 17:26:08 2018 -0400
1806. fixed: conflict
1808. commit dce1b9e20fc2124420d7ff0d908228b0eeb7368a
1809. Author: Tim <pw2440@columbia.edu>
1810. Date:   Thu Nov 1 17:21:26 2018 -0400
1812. feat: allExpr to encompass node/edgeexpr, implemented **template** (not working **for** edges)
1814. commit baee0fc967e0351d82eceb9083c263d852a7336d
1815. Merge: 4958169 979577e
1816. Author: HyunBin Yoo <hy2506@columbia.edu>
1817. Date:   Thu Nov 1 16:18:48 2018 -0400
1819. Merge branch 'master' of https://github.com/jrkolsby/Grape
1821. commit 4958169a269425aac35de88f4ee80ce797e8e1db
1822. Author: HyunBin Yoo <hy2506@columbia.edu>
1823. Date:   Thu Nov 1 16:18:20 2018 -0400
1825. fixed
1827. commit 979577ed2c9969ac20d49d279504956c625a5270
1828. Merge: cef616a 265d950
1829. Author: Tim <pw2440@columbia.edu>
1830. Date:   Thu Nov 1 16:16:06 2018 -0400
1832. Merge branch 'master' of https://github.com/jrkolsby/Grape
1834. commit cef616a2c5c29ae8728dda62c61b69dc24ad91be
1835. Author: Tim <pw2440@columbia.edu>
1836. Date:   Thu Nov 1 16:15:43 2018 -0400
1838. feat: vdecl with value in a single line
1840. commit 265d95068873fb25e83980a0f2345ef4df6ed7f1
1841. Author: HyunBin Yoo <hy2506@columbia.edu>
1842. Date:   Thu Nov 1 16:04:14 2018 -0400
1844. fixed
1846. commit b2eb4a55e61bbdcdeed2e3ca496185d4613fd624
1847. Author: Tim <pw2440@columbia.edu>
1848. Date:   Thu Nov 1 15:23:33 2018 -0400
1850. feat: added additional operators
1852. commit 7806b35a2957b098d8fc3c4d84489b310061f531
1853. Author: Nick <nsk2144@columbia.edu>
1854. Date:   Mon Oct 29 23:27:32 2018 +0000
1856. Changes with Dean
1858. commit c7e64243e0ccd6fde5a8272c9cac7861981464a0
1859. Author: Tim <pw2440@columbia.edu>
1860. Date:   Mon Oct 29 16:11:17 2018 -0400
1862. fix: format in README.md
1864. commit 3796648c4cc9b0bc234d6c7bf2d86fa017ffe576
1865. Author: Tim <pw2440@columbia.edu>
1866. Date:   Thu Oct 25 19:12:37 2018 -0400
1868. feat: add square bracket, ampersand to scanner, parser but no syntax
1870. commit 3c49a76489a3b6e7aa6b9552c21c39104a713e24
1871. Author: Nick Krasnoff <nsk2144@columbia.edu>
1872. Date:   Thu Oct 25 18:47:50 2018 -0400
1874. fixed typo in parser.mly
1876. commit cb25e27dfce866de54c4b32c40ec8316f85ffe38
1877. Author: James Kolsby <jrkolsby@mac.com>
1878. Date:   Thu Oct 25 13:38:23 2018 -0400
1880. feat: 'of' types
1882. commit 82d80061ffd62019329fa0e15b977572c59d5817
1883. Author: Timmypoyu <35510576+Timmypoyu@users.noreply.github.com>
1884. Date:   Mon Oct 22 17:03:17 2018 -0400
1886. Feat: update Readme.md
1888. commit b92add65ea0de3698a5b597cd21b6e3486b8c001
1889. Author: James Kolsby <jrkolsby@mac.com>
1890. Date:   Mon Oct 15 19:53:40 2018 -0400
1892. feat: assignment bindings
1894. commit 8b6e2b9b68e1e776befc684b37826f042f9e394c
1895. Author: James Kolsby <jrkolsby@mac.com>
1896. Date:   Mon Oct 15 19:38:27 2018 -0400
1898. feat: finished graph initialization
1900. commit 1534bfdcfaa80d77f78e2e98615743d8f18a5afa
1901. Merge: 96f7355 c12c296
1902. Author: Tim <pw2440@columbia.edu>
1903. Date:   Mon Oct 15 19:32:29 2018 -0400
1905. fix: merge conflicts
1907. commit 96f7355d0bff258b7f7caa9d35a8e177876145e2
1908. Author: Tim <pw2440@columbia.edu>
1909. Date:   Mon Oct 15 19:29:19 2018 -0400
1911. add grapg\_list
1913. commit c12c29644a7168133ab7524a64fbad27c4d3d402
1914. Author: James Kolsby <jrkolsby@mac.com>
1915. Date:   Mon Oct 15 19:28:47 2018 -0400
1917. feat: graph syntax
1919. commit affd51ad0b7b0ff9c6ad3154f012f1effe10f039
1920. Author: James Kolsby <jrkolsby@mac.com>
1921. Date:   Mon Oct 15 19:06:23 2018 -0400
1923. feat: comment scanning
1925. commit 3e857c3b686cb8043b1e297bdc1cf2f89ec76ebf
1926. Author: James Kolsby <jrkolsby@mac.com>
1927. Date:   Mon Oct 15 16:02:22 2018 -0400
1929. feat: graph syntax
1931. commit c4035bd9755640c4a121336161ed86c3ec3f65da
1932. Author: James Kolsby <jrkolsby@mac.com>
1933. Date:   Mon Oct 15 13:52:36 2018 -0400
1935. feat: scanner updates
1937. commit 5232991a4f8a04f97f5dc710e01bd43689a6aec2
1938. Author: James Kolsby <jrkolsby@mac.com>
1939. Date:   Mon Oct 15 02:16:28 2018 -0400
1941. feat: Node and Edge types
1943. commit 4ae9ef9b1ef54182f8be019972a47430921d0ad3
1944. Author: Tim <pw2440@columbia.edu>
1945. Date:   Mon Oct 15 00:50:05 2018 -0400
1947. changed comment to three backslash
1949. commit 73dc0e01cca6f94b9476216a05d3a69c1a921353
1950. Author: James Kolsby <jrkolsby@mac.com>
1951. Date:   Sun Oct 14 16:10:18 2018 -0400
1953. refactor: moved reference
1955. commit 0c8641e74f436471c6cde9a6cfb7345fb68dd222
1956. Author: James Kolsby <jrkolsby@mac.com>
1957. Date:   Sun Oct 14 16:08:52 2018 -0400
1959. feat: Graph templating in LRM
1961. commit 9c960f69330c2d294ad32888f6ae9319a56e19ec
1962. Author: James Kolsby <jrkolsby@mac.com>
1963. Date:   Sat Oct 13 22:38:45 2018 -0400
1965. refactor: moved MicroC to root
1967. commit d3a24a28f96478bb0a43754d6fb3305a32c41a4f
1968. Author: James Kolsby <jrkolsby@mac.com>
1969. Date:   Sat Oct 13 22:36:10 2018 -0400
1971. feat: Started LRM
1973. commit 1476cbd9ca5f4d29fcf9eff6352ab23306c0c051
1974. Author: James Kolsby <jrkolsby@mac.com>
1975. Date:   Sat Oct 13 21:23:45 2018 -0400
1977. feat: string literals
1979. commit 1ec95df9a7c8d66cdadaf4a76a2f909ce143035e
1980. Author: James Kolsby <jrkolsby@mac.com>
1981. Date:   Sat Oct 13 21:04:10 2018 -0400
1983. feat: primitive types
1985. commit 14417c3afcde93ed9d9187058fc954afc904f821
1986. Author: James Kolsby <jrkolsby@mac.com>
1987. Date:   Sat Oct 13 20:23:30 2018 -0400
1989. feat: microc parser and scanner
1991. commit 9c2923240cf77e3acaf89969ec9422730cab07aa
1992. Author: Nick Krasnoff <nsk2144@columbia.edu>
1993. Date:   Sat Oct 13 19:54:20 2018 -0400
1995. Added calculator Makefile
1997. commit 20fc371fbe05472782f038e570d2820be6cfba8e
1998. Merge: f990a9c 21a5cd0
1999. Author: James Kolsby <jrkolsby@mac.com>
2000. Date:   Sat Oct 13 19:46:10 2018 -0400
2002. fix merge
2004. commit f990a9c914265518d778bf5abf0b503d80fb87b8
2005. Author: James Kolsby <jrkolsby@mac.com>
2006. Date:   Sat Oct 13 19:44:20 2018 -0400
2008. fix: deleted files
2010. commit 21a5cd035cd5081f95603a4b36ac9cbdae2cba2b
2011. Merge: d9cee65 80d5dac
2012. Author: Nick Krasnoff <nsk2144@columbia.edu>
2013. Date:   Sat Oct 13 19:43:47 2018 -0400
2015. Merge branch 'master' of https://github.com/jrkolsby/PLTProject
2017. commit d9cee65773d5b42e554cecf54c6db1ec7b3e22e8
2018. Author: Nick Krasnoff <nsk2144@columbia.edu>
2019. Date:   Sat Oct 13 19:43:26 2018 -0400
2021. Added microc source
2023. commit 80d5dac5302504f1dff21f97e1a7b2b71cfb400e
2024. Author: James Kolsby <jrkolsby@mac.com>
2025. Date:   Sat Oct 13 19:42:16 2018 -0400
2027. fix: refactor
2029. commit 3f3e27e40bbd3b46407168c61916fa09274db74b
2030. Author: James Kolsby <jrkolsby@mac.com>
2031. Date:   Sat Oct 13 19:41:38 2018 -0400
2033. feat: proposal
2035. commit d902c90a6c11f1d0c43ba6efd1043c43630341cd
2036. Author: x <x@y.com>
2037. Date:   Fri Sep 7 00:01:31 2018 -0400
2039. first commit

**Development Tools and Languages:**

* + Communication: SMS messages, Slack
  + Version Control: Git, Github
  + Programming Editor: Vim, Sublime Text
  + Languages: Ocaml, C Language, Shell Script
  + Documentation: Github Markdown

**Project Log:**

**Architectural Design**

Grape’s compiler is constituted of several files, with functionalities of their own. There are a primary repository, src, that holds the translator of scanner, parser, ast, sast, semant, codegen and a c library that is linked to codegen for functions.

|  |
| --- |
| example.grp |

|  |
| --- |
| scanner |

|  |
| --- |
| parser |

|  |
| --- |
| ast |

|  |
| --- |
| sast |

|  |
| --- |
| semant |

|  |
| --- |
| codegen |

|  |
| --- |
| executable |

* Give block diagram showing the major components of your translator

Components

**Scanner**

The scanner takes a stream of ASCI texts and turned them into tokens. Whitespaces are discarded and texts in the comment syntax are not transformed. At this stage, if a stream of text is not syntactically correct, the executable would return a parsing error.

**Parser, Ast and Sast**

The parser takes in the tokens produced by the scanner, and convert into a Abstract Syntax Tree.

**Semant**

**Codegen**

**C Library**

* State who implemented each component

Scanner: James Kolsby, Nick Krasnoff, Po Yu (Timmy) Wu

Parser, Ast and Sast: Edward Yoo, James Kolsby, Nick Krasnoff, Po Yu (Timmy) Wu  
Semant and Codegen: James Kolsby, Nick Krasnoff, Po Yu (Timmy) Wu

C Library: Edward Yoo, Nick Krasnoff, Po Yu (Timmy) Wu, Edward Yoo

Test Plan (Nick)

* Show two or three representative source language programs along with the target language program generated for each: dfa, dijkstra?
* Show the test suites used to test your translator
* Explain why and how these test cases were chosen
* What kind of automation was used in testing
* State who did what

Lessons Learned (Everyone)

* Each team member should explain his or her most important learning

Edward (HyunBin) :

James:

Nick:

Timmy (Po Yu) :

* Include any advice the team has for future teams (Timmy)

Appendix

* Attach a complete code listing of your translator with each module signed by its author  
  (Do not include any automatically generated files, only the sources.)