|  |  |  |  |
| --- | --- | --- | --- |
| Code | Line cost | # executed | Total |
| Open file | 1 | 1 | 1 |
| Create vector | 1 | 1 | 1 |
| Create ID vector | 1 | 1 | 1 |
| For each line | 1 | n | n |
| Remove whitespace | 1 | n | n |
| Split into tokens(,) | 1 | n | n |
| If number of tokens < 2 | 1 | n | n |
| Error message | 1 | n |  |
| Store token[0] courseID | 1 | n | n |
| Store token[1] courseTitle | 1 | n | n |
| Initialize empty preReq list | 1 | n | n |
| If number of tokens >2 | 1 | n | n |
| For each token after token[1] | 1 | N | N |
| Add to preReq | 1 | N | N |
| Create new Course | 1 | N | N |
| Add Course to courses vector | 1 | N | N |
| Add courseID to courseIDS vector | 1 | N | N |
| For each course in courses vectore | 1 | N | N |
| If course.preReq is not empty | 1 | N | N |
| For each preReq in course.preReq | 1 | N | N |
| If preReq is not in courseIDS | 1 | N^2 | N^2 |
|  |  |  | N^2 |

VECTOR

HASH TABLE

|  |  |  |  |
| --- | --- | --- | --- |
| code | Line cost | # executed | total |
| Open file | 1 | 1 | 1 |
| Create courses hash table | 1 | 1 | 1 |
| Create courseIDs hash table | 1 | 1 | 1 |
| For each line | 1 | N | N |
| Remove whitespace | 1 | N | N |
| Split into token(,) | 1 | N | N |
| If number of tokens <2 | 1 | N | N |
| Output error message | 1 | N | N |
| Store toke[0] in ocurseId | 1 | N | N |
| Store toke[1] in courseTitle | 1 | N | N |
| Initialize empty preReq list | 1 | N | N |
| If number of tokens > 2 | 1 | N | N |
| For each token after token[1] | 1 | N | N |
| Add to preReq | 1 | N | N |
| Create new Course | 1 | N | N |
| Insert in courses has table | 1 | N | N |
| Add courseId to courseID hash table | 1 | N | N |
| For each course in courses hash | 1 | N | N |
| If course.preReq is not empty | 1 | N | N |
| For each preReq in course.preReq | 1 | N | N |
|  |  |  | N |

BINARY SEARCH TREE (BST)

|  |  |  |  |
| --- | --- | --- | --- |
| Open file | 1 | 1 | 1 |
| Create empty Binary Search Tree | 1 | 1 | 1 |
| For each line | 1 | N | N |
| Remove whitespace | 1 | N | N |
| Split line into tokens (,) | 1 | N | N |
| If number of tokens < 2 | 1 | N | N |
| Output error message | 1 | N | N |
| Store token[0] in courseId | 1 | N | N |
| Store token[1] in ocurseTitle | 1 | N | N |
| Initialize empty preReq list | 1 | N | N |
| If number of tokens >2 | 1 | N | N |
| For each token after token[1] | 1 | N | N |
| Add to preReq list | 1 | N | N |
| Create new Course | 1 | N | N |
| Insert course into Binary search tree | logN | N | NlogN |
| For each course in tree | 1 | N | N |
| If course.preReq is not emepty | 1 | N | N |
| If preReq is not in ocurses | logN | N | NlogN |
|  |  |  | NlogN |