**Binary Search Tree**

| **Code**  **READING/PARSING DATA** | **Line Cost** | **# Times Executes** | **Total Cost** |
| --- | --- | --- | --- |
| **Open CourseInformation.txt** | 1 | 1 | 1 |
| **FOR each prerequisite** | 1 | n | n |
| **IF less than 2 parameters** | 1 | n | n |
| **FOR EACH Prerequisite** | 1 | n | n |
| **IF preq does not exist** | 1 | n | n |
| **ADD to Course** | 1 | n | n |
| **ADD this course to vector** | 1 | n | n |
| **Total Cost** | | | 6n + 1 |
| **Runtime** | | | O(n) |

| **Code**  **CREATING COURSE OBJECTS** | **Line Cost** | **# Times Executes** | **Total Cost** |
| --- | --- | --- | --- |
| **Course = newCourse()** | 1 | 1 | 1 |
| **IF item in pReqs not exist** | 1 | n | n |
| **ADD Course to courses vector** | 1 | n | n |
| **ADD this Course to course tree** | 1 | n | n |
| **Total Cost** | | | 3n + 1 |
| **Runtime** | | | O(n) |

**Hash Table**

| **Code**  **READING/PARSING DATA** | **Line Cost** | **# Times Executes** | **Total Cost** |
| --- | --- | --- | --- |
| **Open CourseInformation.txt** | 1 | 1 | 1 |
| **Key = numCourses\*2** | 1 | 1 | 1 |
| **FOR each line** | 1 | n | n |
| **IF less than 2 parameters** | 1 | n | n |
| **FOR each line** | 1 | n | n |
| **CREATE new Course Vector** | 1 | n | n |
| **HashInstert(Courses,courseId** | 1 | 3n | 3n |
| **Total Cost** | | | 7n + 2 |
| **Runtime** | | | O(n) |
| **Code**  **CREATING COURSE OBJECTS** | **Line Cost** | **# Times Executes** | **Total Cost** |
| **Course = newCourse()** | 1 | 1 | 1 |
| **IF item in pReqs not exist** | 1 | n | n |
| **ADD Course to courses vector** | 1 | n | n |
| **HashInsert(Courses,courseId)** | 1 | 3n | 3n |
| **Total Cost** | | | 5n + 1 |
| **Runtime** | | | O(n) |

**Array**

| **Code**  **READING/PARSING DATA** | **Line Cost** | **# Times Executes** | **Total Cost** |
| --- | --- | --- | --- |
| **Open CourseInformation.txt** | 1 | 1 | 1 |
| **While currentCourse is not last** | 1 | n | n |
| **IF Line has at least 2 parameters** | 1 | n | n |
| **Parse each line…** | 1 | n | n |
| **FOR each line** | 1 | n | n |
| **CREATE course object** | 1 | 5n | 5n |
| **Total Cost** | | | 9n + 1 |
| **Runtime** | | | O(n) |
| **Code**  **CREATING COURSE OBJECTS** | **Line Cost** | **# Times Executes** | **Total Cost** |
| **Course = newCourse()** | 1 | 1 | 1 |
| **IF input is not none** | 1 | n | n |
| **IF input is not none** | 1 | n | n |
| **IF input is not none** | 1 | n | n |
| **WHILE this course < curCourse** | 1 | n | n |
| **Vector.InsertAfter()** | 8 | 3n | 3n + 8 |
| **Total Cost** | | | 7n + 9 |
| **Runtime** | | | O(n) |