|  |  |  |  |
| --- | --- | --- | --- |
| **Vector** | **Line Cost** | **Number of time code executes** | **Total cost** |
| **Create vector** | **1** | **1** | **1** |
| **For every line** | **1** | **n** | **n** |
| **Generate course item** | **1** | **n** | **N** |
| **While prereq exists** | **1** | **n** | **n** |
| **+ Prereq** | **1** | **n** | **n** |
| **Pushback course item** | **1** | **N** | **N** |
| **Total cost** |  |  | **5n+1** |
| **Runtime** |  |  | **0N** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Hashtable** | **Line cost** | **Number of time code executes** | **Total cost** |
| **Generate hash table** | **1** | **1** | **1** |
| **Insert method** | **0** | **0** | **0** |
| **Generate key for course** | **1** | **n** | **n** |
| **If no entry found for key** | **1** | **n** | **n** |
| **Set node to key** | **1** | **n** | **n** |
| **else** | **1** | **n** | **n** |
| **Set prev node to UNIT\_MAX, set to key, set prev node to course, and prev node to next null pointer** | **4** | **n** | **4n** |
| **else** | **1** | **n** | **n** |
| **Find next open node** | **1** | **n** | **n** |
| **+ new newNode to end** | **1** | **n** | **n** |
| **For every new line in file** | **1** | **n** | **n** |
| **Create vector course item** | **1** | **n** | **n** |
| **While prereq exists** | **1** | **n** | **n** |
| **+ prereq** | **1** | **n** | **n** |
| **Insert course item** | **1** | **n** | **n** |
| **Total cost** |  |  | **16n+1** |
| **Runtime** |  |  | **0(n)** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Binary search tree** | **Line Cost** | **Number of time code executes** | **Total cost** |
| **+ node method** | **0** | **0** | **0** |
| **If root = null, + root** | **1** | **1** | **1** |
| **If node > root, + left** | **1** | **n** | **n** |
| **If no left node** | **1** | **n** | **n** |
| **This node becomes left** | **1** | **n** | **n** |
| **If node < root, + right** | **1** | **n** | **n** |
| **If no right node** | **1** | **n** | **n** |
| **This node becomes right** | **1** | **n** | **n** |
| **For every line in file** | **1** | **n** | **n** |
| **Generate vector course item** | **1** | **n** | **n** |
| **While prereq exists** | **1** | **n** | **n** |
| **+ Prereq** | **1** | **n** | **n** |
| **Insert course item** | **1** | **n** | **n** |
| **Total cost** |  |  | **11n+2** |
| **Runtime** |  |  | **0(n)** |