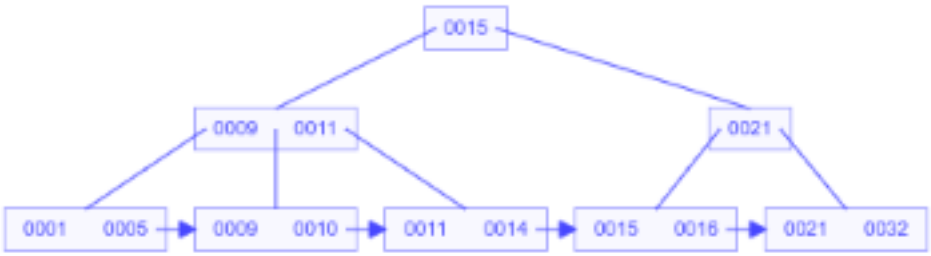
B+ Trees

CS 340 Assignment 4 Deadline: 8th Dec

A B+ tree of degree **m** is a balanced tree in which each node can hold a maximum of **m** keys and **m+1** pointers.

```
BPlusTree tree(3); // creating a tree of degree 3
tree.insert(5);
tree.insert(10);
tree.insert(14);
tree.insert(32);
tree.insert(9);
tree.insert(21);
tree.insert(1);
tree.insert(11);
tree.insert(15);
tree.insert(16);
```

The above code results in the following tree



A depth first traversal of the tree results in the following string.

```
tree.display();
```

```
{15} {9}{11} {1}{5} {9}{10} {11}{14} {21} {15}{16} {21}{32}
```

In this assignment, you are expected to implement the **insert**, **remove** and **search** functions.

Insert **[40]**

This function takes a key as input and inserts it into the tree.

Remove **[40]**

This function takes a key as input and removes the key from the tree.

Search **[20]**

This function takes a key and returns the pointer to the node responsible for that key, if present.

You been provided skeleton code to aid you. To see further examples, use the following visualization tool. Note that the max. degree parameter in this tool refers to the maximum number of pointers.

Submission Guidelines

The following is the recommended directory structure for the assignment.

```
|-- 21100XYZ
   |-- btree.cpp
   |-- btree.h
```

Zip this folder into `2110XYZ.zip` and submit on LMS. No late submissions will be accepted.