Data Structures Project #2 Report

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1) and 2)

```
Reading Process Started...
Reading Completed Successfully..
Enter the keyword you want to search:text

The number of relevant documents: 1

Binomial Heap Root Nodes List:
content_585649196676(2)
```

3) Enqueue and Dequeue

Enqueue Function

```c
void enqueue(int number,char *filename) {
    heapNode *tempNode = createBinHeapNode(number,filename);
    heapNode *tempHeap = createBinHeap();
    tempNode->parentNode = NULL;
    tempNode->childNode = NULL;
    tempNode->siblingNode = NULL;
    tempNode->degreeData = 0;
    tempHeap = tempNode;
    rootHeap = binHeapUnionEnqueue(rootHeap, tempHeap);
}

heapNode *binHeapUnionEnqueue(heapNode *H1,heapNode *H2) {
    heapNode *prevX=NULL,*x,*nextX; // variable initializations
    heapNode *tempHeap = createBinHeap();   // Temporary heap.
function returns that heap to the caller.
    tempHeap = binHeapMergeEnqueue(H1, H2); // First of all, the
arguments of the functions merged.
    if (tempHeap == NULL) {
        return tempHeap;
    }
    x = tempHeap;    // x is the head of the root list of the
heap.
    nextX = x->siblingNode; // next x is the sibling node of the
x.
    while (nextX != NULL) {
        // iteration in the root list.
        if ((x->degreeData != nextX->degreeData) || ((nextX-
>siblingNode != NULL) && (nextX->siblingNode)->degreeData == x-
>degreeData)) {
            prevX = x;
            x = nextX;
        } else { // That else statement actually sorts the root
list.
            if (x->numberOfWordsData >= nextX->numberOfWordsData)
{
                x->siblingNode = nextX->siblingNode;
                heapLinking(nextX, x);
            } else {
                if (prevX == NULL) {
```

```c
                    tempHeap = nextX;
                }else {
                    prevX->siblingNode = nextX;
                }
                heapLinking(x, nextX);
                x = nextX;
            }
        }
        nextX = x->siblingNode;
    }
    return tempHeap;
}

heapNode *binHeapMergeEnqueue(heapNode *H1,heapNode *H2) {
    heapNode *temp = createBinHeap(),*heap1=H1,*heap2=H2;
    if (heap1 != NULL) {
        if ((heap2 != NULL && heap1->degreeData <= heap2-
>degreeData) || heap2==NULL ){
            temp = heap1;
        }
        else if (heap2 != NULL && heap1->degreeData > heap2-
>degreeData){
            temp = heap2;
        }
    } else{
        temp= heap2;
    }
    heapNode *a,*b;
    while (heap1 != NULL && heap2 != NULL) {
        if (heap1->degreeData < heap2->degreeData) {
            heap1 = heap1->siblingNode;
        } else if (heap1->degreeData == heap2->degreeData) {
            a = heap1->siblingNode;
            heap1->siblingNode = heap2;
            heap1 = a;
        } else {
            b = heap2->siblingNode;
            heap2->siblingNode = heap1;
            heap2 = b;
        }
    }
    return temp;
}
```

Dequeue Function

```c
// Dequeue function. In that function, the node which stores the
higher number of words is extracted to the binomial heap and
returns the
// removed node so we know which node is removed.
heapNode* dequeueMaxNode(heapNode *H1) {
    heapNode *temp = NULL, *removedNode=H1, *iter;
    helperHeap = NULL;
    if (removedNode == NULL) {
        printf("\nDequeue Error! No nodes to extract!!");
        return removedNode;
    }
    iter = removedNode;
    int max=iter->numberOfWordsData;
    while (iter->siblingNode != NULL) {
        if ((iter->siblingNode)->numberOfWordsData > max) {
            max = (iter->siblingNode)->numberOfWordsData;
            temp = iter;
            removedNode= iter->siblingNode;
        }
        iter = iter->siblingNode;
    }
    if (temp == NULL && removedNode->siblingNode == NULL){
        H1 = NULL;
    }
    else if (temp == NULL) {
        H1 = removedNode->siblingNode;
    }
    else if (temp->siblingNode == NULL) {
        temp = NULL;
    }
    else {
        temp->siblingNode = removedNode->siblingNode;
    }
    if (removedNode->childNode != NULL) {
        binHeapRootListLinking(removedNode->childNode);
        (removedNode->childNode)->siblingNode = NULL;
    }
    rootHeap = binHeapUnionDequeue(H1, helperHeap);
    return removedNode;
}
```

4) Results

There is only one file contains text keyword. As a result, one file added to the binomial heap. Because of that only one extraction can be done.

```
Binomial Heap Root Nodes List:
content_585649196676(2)


        The number of words in content_585649196676 is 2
        content_585649196676 -> Pros Lots of value for the price great picture lots of video adjustments Cons Really can't think of any The Bottom Line The LG 55LW5600
sports lots of well implemented features for the price Video adjustments a'plenty for more hand on customers and enough internet content to replace a roku That I'm abou
t to write a favorable opinion on the LG 55LW5600 is quite remarkable in light of my bias for plasma TVs I've associated LCD LED TVs with high contrast and overly satur
ated imagery which was OK for sporting events but ruins most anything else Electronic consumer stores like BestBuy have only reinforced my views by setting their TV's t
o display over the top contrast and saturated pictures But when it was time to upgrade my ancient Panasonic plasma I read a lot of articles on the web that convinced me
 that LCD LEDs have come a long way and LCDs had three features I particularly wanted matte screens for superior display in brightly lit rooms energy efficiency and lig
ht weight for easy mounting All that said I'll briefly touch on the most salient features of the 5600 Image quality The 5600 is capable of producing well balanced image
ry The default settings are too punchy but LG has developed a reputation for providing a complete toolbox of picture controls and the 5600 is no exception Beyond the st
andard adjustments you have access to two expert modes which give you adjustments such as 10 point color temperature settings But the standard control settings provide
more than enough control to produce a pleasing natural evenly lit picture This plasma lover is impressed In sunlight it exceeds what my plasma can produce and in dim li
ght it isn't too far off Overall a solid performer My quick tuning advise disable TruMotion dejudder reduce contrast down to 93 reduce sharpness down 58 set Local Dimmi
ng to high and turn off super resolution A word about local dimming you get what you pay for and at this price it isn't a sophisticated implementation The lg 55 inch di
splay has 16 zones compare that to high end solution that would have 240 zones in the same space and you'll see that not all local dimming implementations are the same
Kudos for an auto energy saving mode that works great It dims the picture to match the ambient light brightness in the room I keep it in that mode all the time not just
 to save energy but to get an image best tuned for the lighting conditions Until video games embrace 3d I have no use for this new dimension of viewing I did don the gl
asses for one movie the 3d effect was fine even with mild off angle viewing I am a proponent of passive 3d which allows for very simple lightweight and cheap polarized
glasses A pair is available for 10 if I had kids I wouldn't consider more expensive complicated systems Audio What Which is to say weak Ok for broadcast TV but it can't
 handle dynamic sound that comes from movies There are ports on the back to export the audio to an external amplifier Use it One nice touch the LG comes with an video a
udio sync tuning menu control Remote Controls The 5600 comes with 2 remote controls and a remote control app that runs on your Android or Iphone device One of the two r
emote controls is your typical button filled device Works great The second remote control is a minimalist unit that navigate menus using motion sensors Basically a Nint
endo Wii like experience Not for everyone But the smartphone App is amazing It give you a touch pad experience which is great for navigating the 5600's internet suite W
hen you have to input text the app pulls up your smart phone's keyboard which is ten times faster to use than the TV's built in keyboard Best yet on my android I can sp
eak the text and it shows up on the LG it really is an excellent feature Internet Suite Since I already own a Roku I wasn't shopping for a TV with apps But I'm happy to
 say that LG's implementation of Amazon video store is so good I've been able to move my Roku onto another TV The internet browser in conjunction with the smartphone co
ntrol app is actually decent for navigating news sites It does have Adobe flash but an older version that many video sites do not support I wonder if they'll update tha
t You can connect to the internet via wire or a supplied USB wireless device supports G N protocols Video Games There is a video mode for games that shuts of all the tv
 enhancements to minimize game lag Seems to work fine I haven't noticed any lag A Word About Size 55 inches may seem a little excessive but there is a point to this siz
e which is immersion Wider angles of picture are more engaging than smaller and preserve the illusion or experience of the program If you are a movie fan this point is
very salient and you'll find it takes the viewing experience to a new level There are some admittedly self serving guides to how big a screen size you should buy relati
ve to viewing distance but there is a reason for it beyond just bigger is better I would suggest reading some articles on this topic on consumer review sites that you t
rust Summary The 5600 is overall a great well integrated package It can be adjusted to produce a very natural looking picture that looks great in both bright and dim li
t rooms The internet app suite is surprisingly useful and features like the remote control wand and the smartphone remote control apps reflect great product design High
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Dequeue Error! No nodes to extract!!
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The program ended.
Process returned 0 (0x0)   execution time : 4.425 s
Press any key to continue.
```

5) Advantages of Using Priority Queue

The advantage of using priority queue with binomial heaps is the time. The operations are a bit faster than other data structures. Because of that, it may be a helpful data structure for big data size.