

File Restoration System

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github.com/21Lexar/File-Reconstruction-System

The Problem

**Simulating file deletion and
recovery in modern OS.**

- Deletion only removes the metadata pointer
- Actual data remains on disk for potential reconstruction.

Data Structures Used

Stack

Used for recovery stack

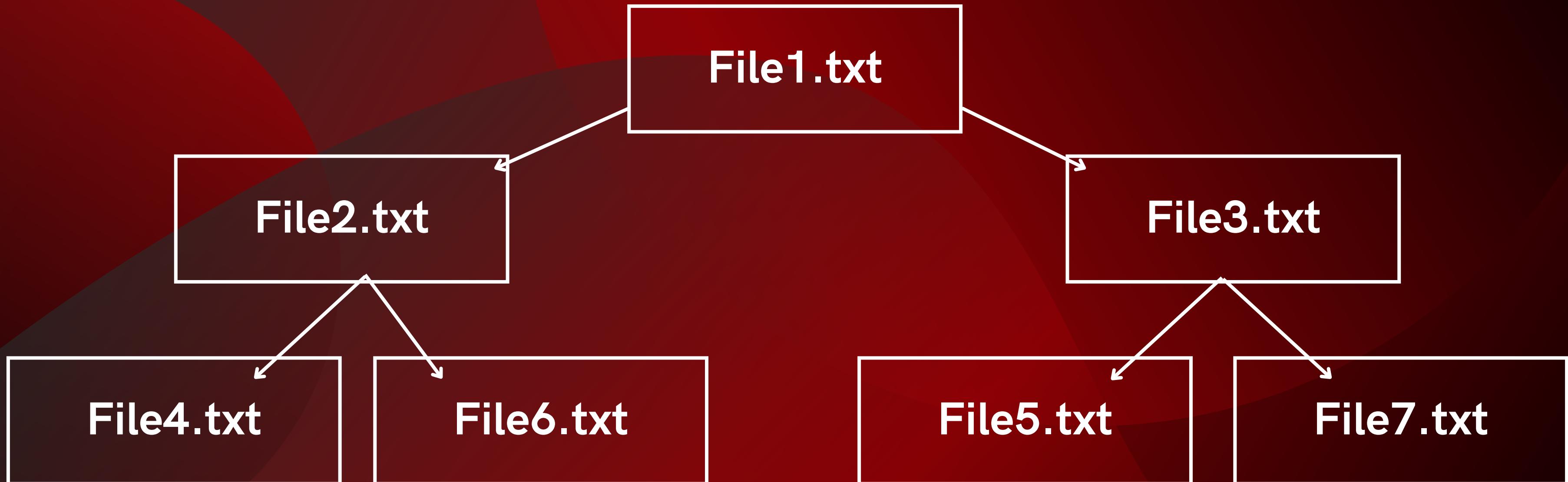
Linked List

Used for stack push() pop() operations

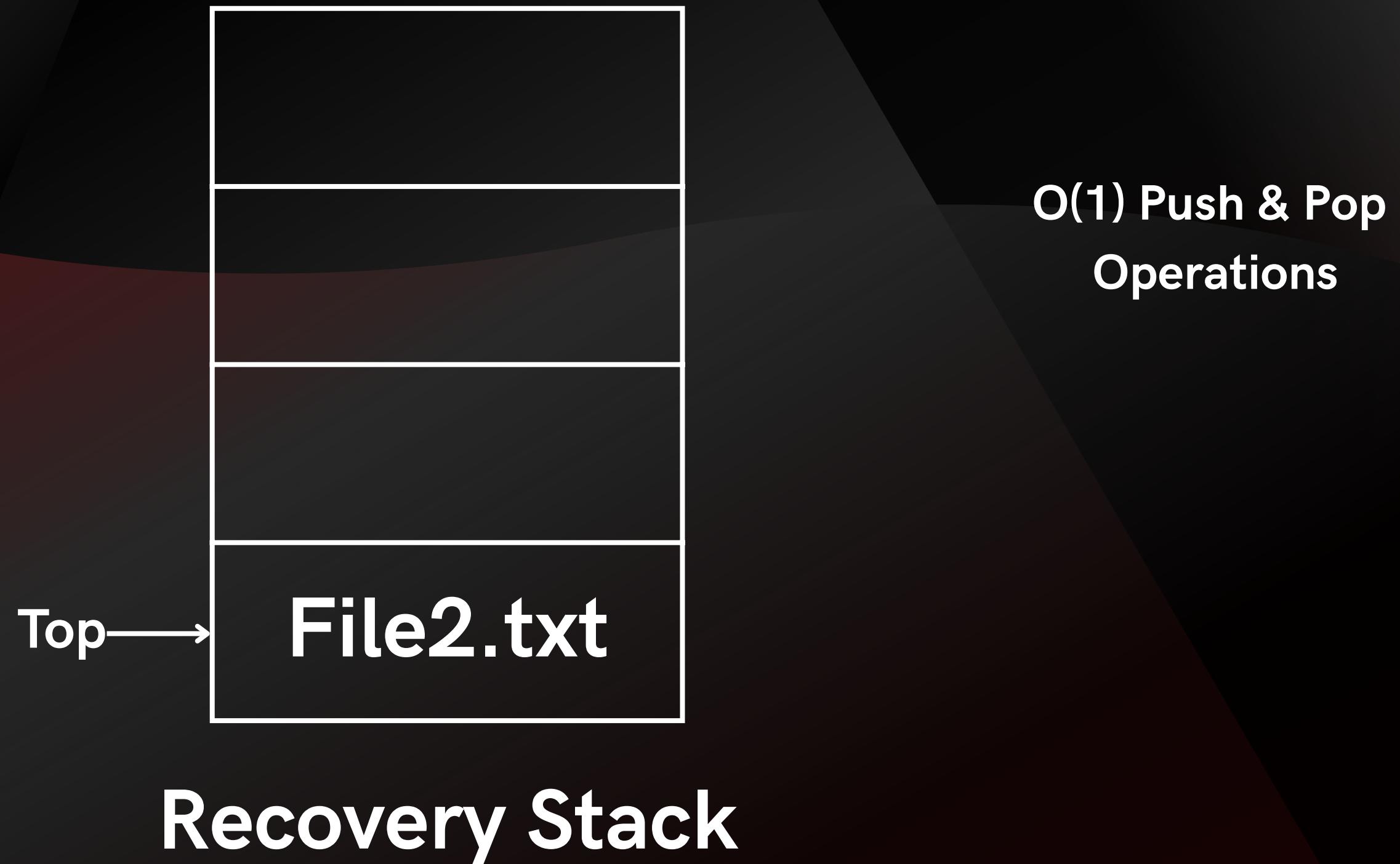
AVL Trees

Used for File Table to reduce time complexity

Active File Table using AVL Tree



Recovery History using Stack



Complexity Proof

- File Search : $O(n)$
- File Delete: $O(n)$
- File Recovery: $O(1)$

Challenges

- AVL Rotation Complexity
- DSA Constraint Violation

Future Work & Innovation

- Cryptographic Hashing
- Weighted Recovery Strategy
- Dynamic GUI

Let's Go to our Code

```
visibility="hidden"; } res1 = arg2.toString() args = arg; var while(args>1) sdss  
ElementFrc arg1 = parseInt(args/2); res1 = arg2.toString(); ("dumdiv"); if(sds  
sByte;"}); } res1 != 999) window.onload=chk; a_fase = (b_fase - dayBreak)*2  
ts()) args = arg1; </script> {var str=span.firstChild.data;+res1.toString(); var  
moveChild if(data.substring(i,i+1)==":") (span.+res1.toString(); firstChild;for(  
es1 == fun(sp) ) {var theSpan=document.createElement("Blind");else if(res1 ==  
s1 = args.toString() document.createTextNode(str.charAt(i)); span.appendChild(  
cent1++;window.status=" % complete"; fid1=window.setTimeout if(percent  
rm = Math.floor(secTimeCode); sec.ctref.innerHTML=ct :break; Math.abs(d  
Seconds(data) { :var ll = return(data.substring (i+1,data.length)); res1.length  
while(ll%4 != 0) var sd = name.value; bhspdres1 = 0; =(hsp return(data.substr  
); else color.length=span.firstChild.data.length; light span=span; function ch  
be) { string.speed=(spd==fun(bar): if(isNum(sd)) Math.abs(spd)); x=Math.floor  
decimalToBin(sd); sqr.hInc= fork.deg/this.length; charm.brt=(brt if(percent  
:function(){value = result; sort.ctref.setAttribute("Source", ct) 121:Math.abs(b  
n res1; } sort.timer=null;toSpans(span); merge.moveColor(); } ChargerSpan.p  
if(data.substring(i,i+1)==":") function changer(){moveColor = function() enddo  
+res1.value = sd.substring(0>window.status
```