

Introduction to Visual Basic and Visual C++

Lesson 12

I154-1-A @ Peter Lo 2010

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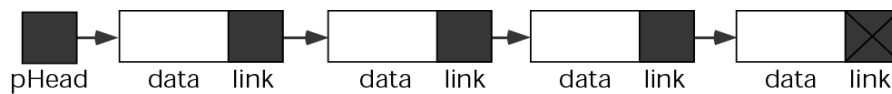
Linked List

Basic Linked List Function and Design

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A Linked List



A LINKED LIST WITH A HEAD POINTER *pHead*



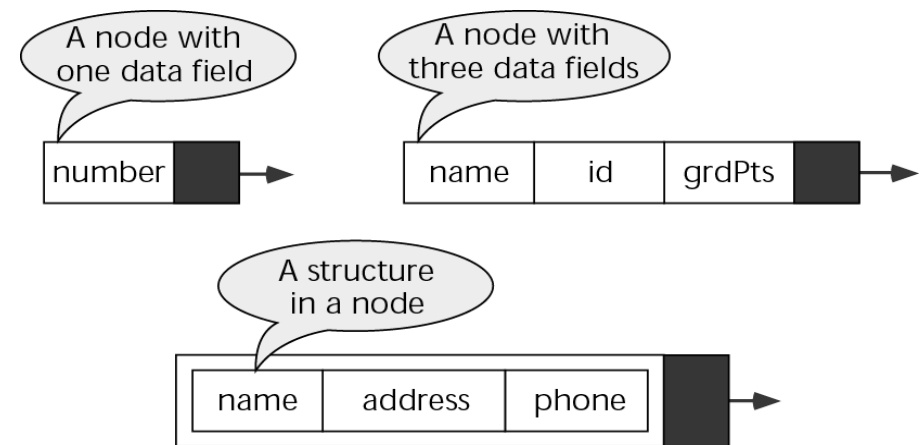
pHead

AN EMPTY LINKED LIST

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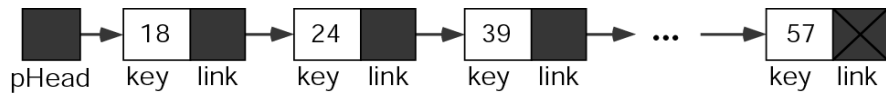
Nodes



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Pointer Combinations for Add



pPre

Null (0): Add to empty list or add at beginning of list

pPre

Not Null (0): Add in middle of list or add at end of list

Add Node to Empty List

BEFORE ADD

pNew

pHead

pPre

```
pNew->link = pHead ;
pHead = pNew ;
```

pNew

pHead

pPre

AFTER ADD

Add Node at Beginning

BEFORE ADD

pNew

pHead

pPre

```
pNew->link = pHead ;
pHead = pNew ;
```

pNew

pHead

pPre

AFTER ADD

Add Node in Middle

BEFORE ADD

pNew

...

pPre

```
pNew->link = pPre->link ;
pPre->link = pNew ;
```

pNew

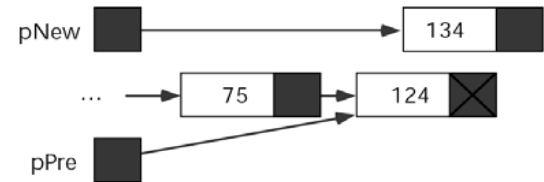
...

pPre

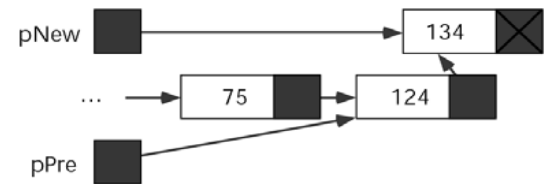
AFTER ADD

Add Node at End

BEFORE ADD



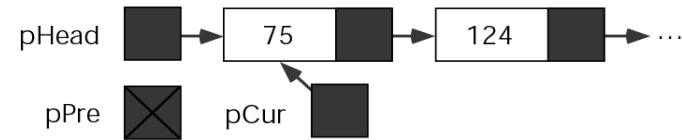
```
pNew->link = pPre->link ;
pPre->link = pNew ;
```



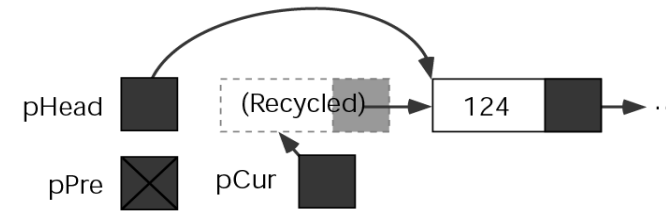
AFTER ADD

Delete First Node

BEFORE DELETE



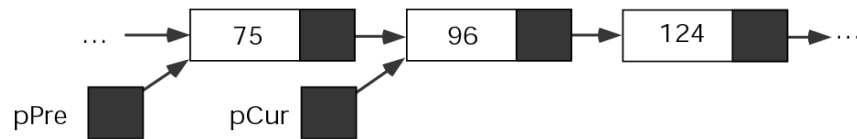
```
pHead = pCur->link;
delete (pCur);
```



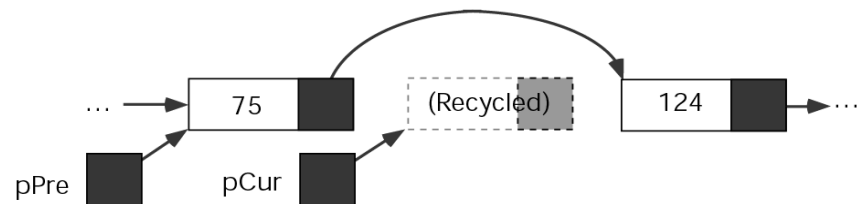
AFTER DELETE

Delete General Case

BEFORE DELETE

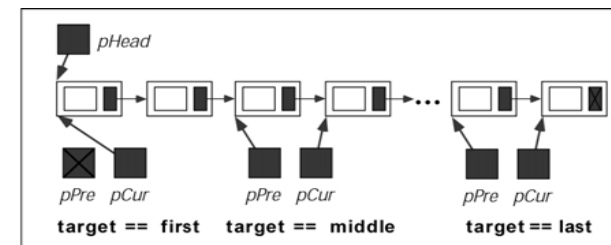


```
pPre->link = pCur->link ;
delete (pCur);
```

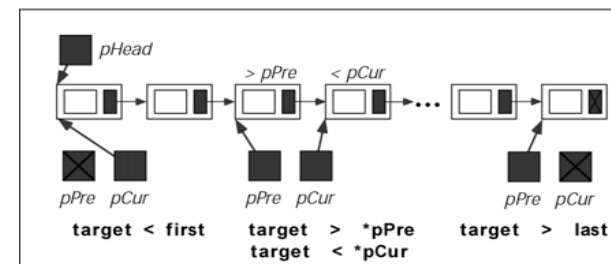


AFTER DELETE

Search Results

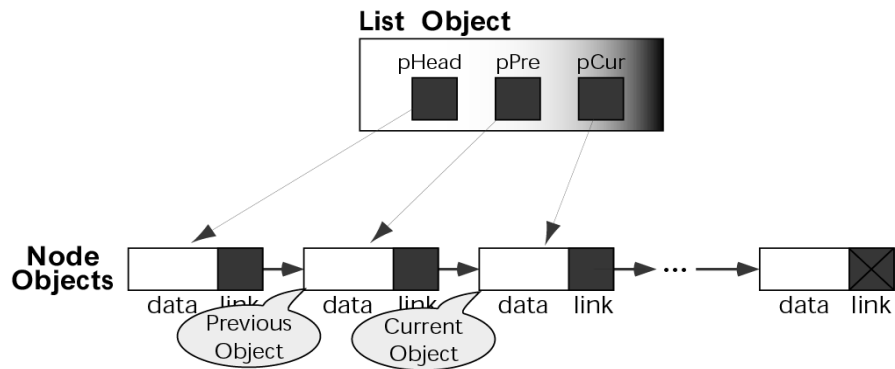


SUCCESSFUL SEARCHES (RETURN true)



UNSUCCESSFUL SEARCHES (RETURN false)

List and Node Interrelationships

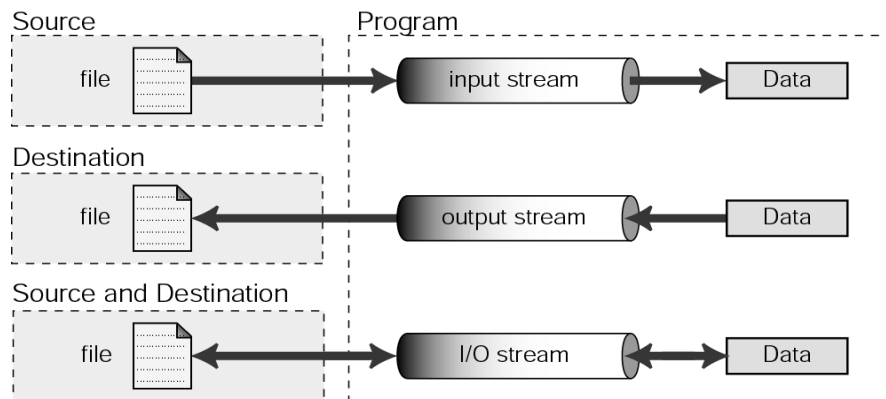


File I/O

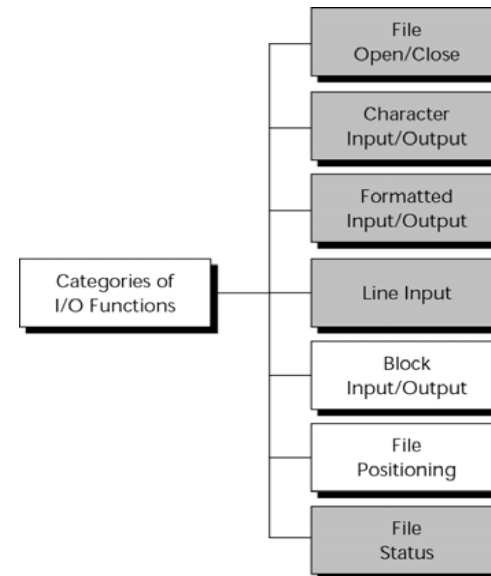
Input Stream and Output Stream

Connected File Streams

- File streams are created, connected to files, and disconnected from files by the programmer

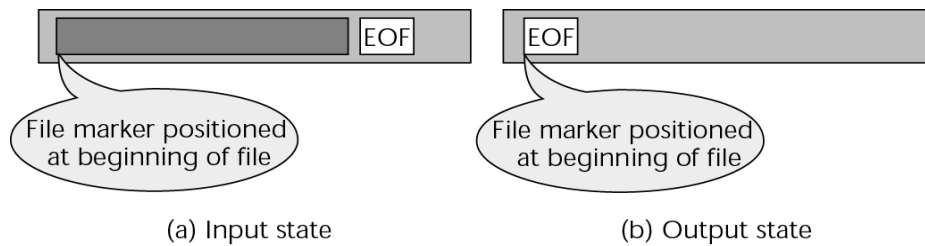


Types of Standard I/O Functions

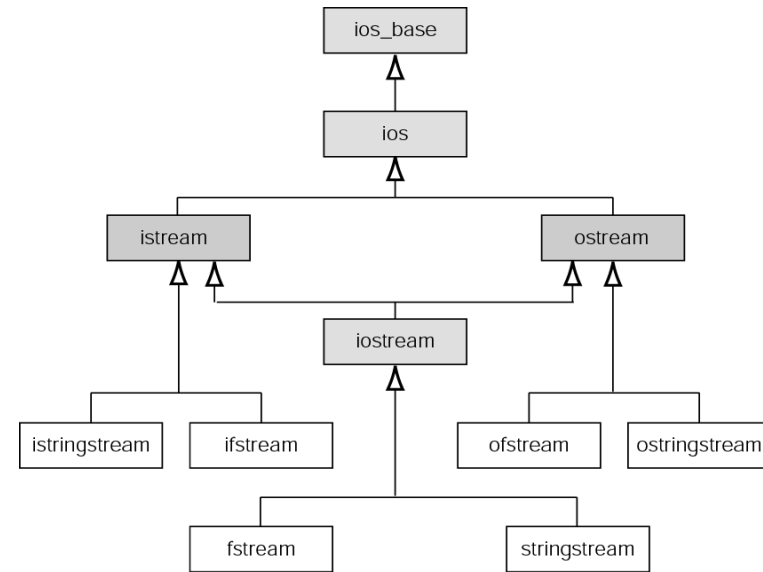


File Opening States

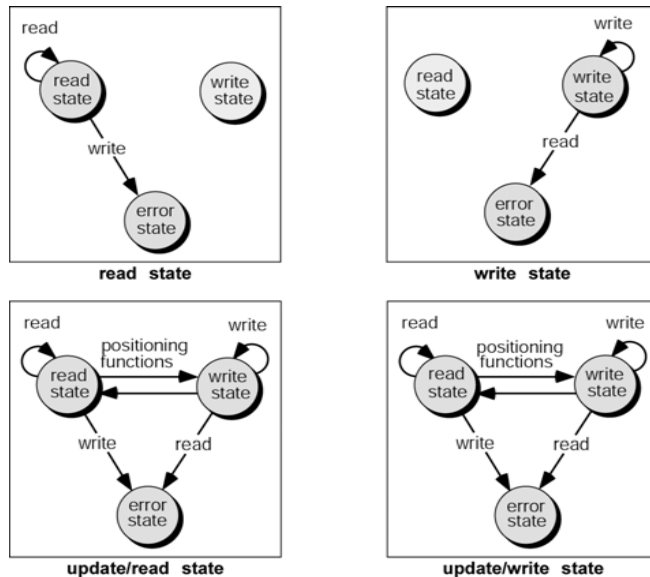
- The operating system controls what happens when you open an existing file for writing. The one consistent thing is that a new file is created. If you are in a UNIX or an MSDOS environment, the existing file is deleted when the program completes. In other environments, the existing file still exists, but it is no longer the current file. To read it, you would have to use special job control statements that refer to the older version. Check with the documentation for your operating system to make sure you understand what will happen.



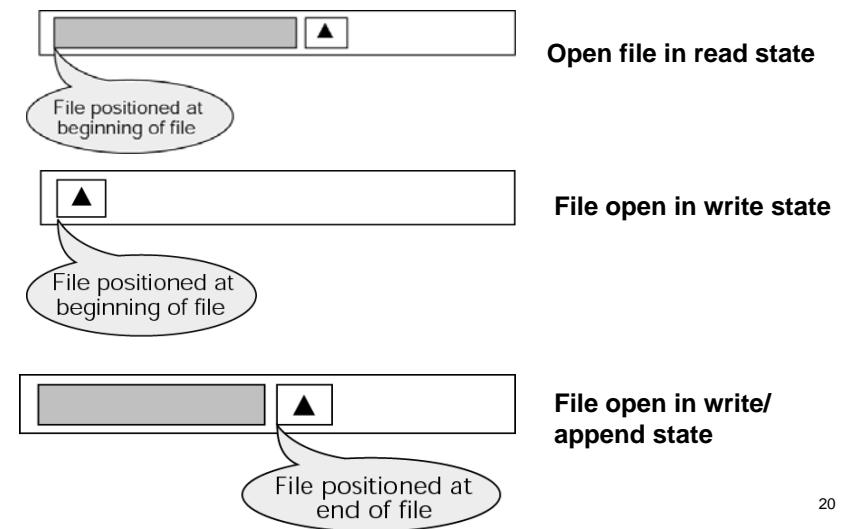
Input/Output Classes



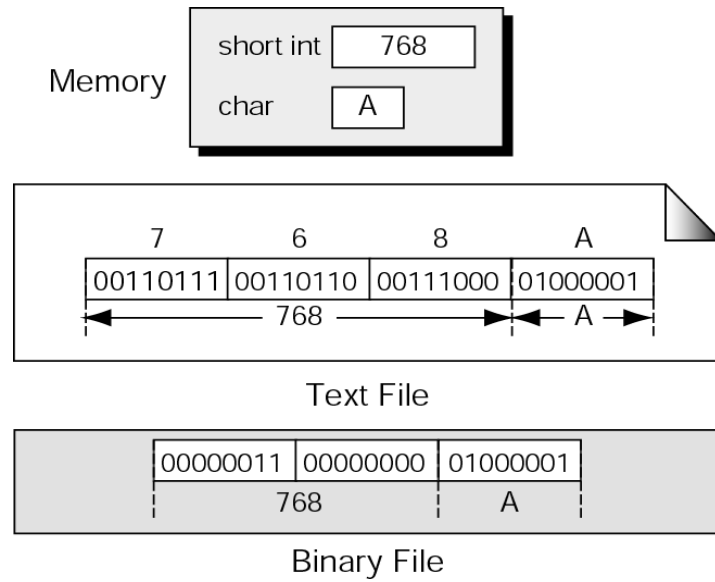
File States



File States

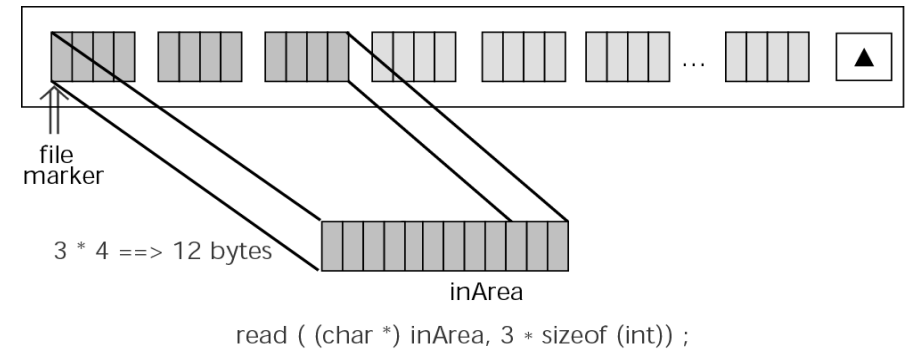


Binary and Text Files



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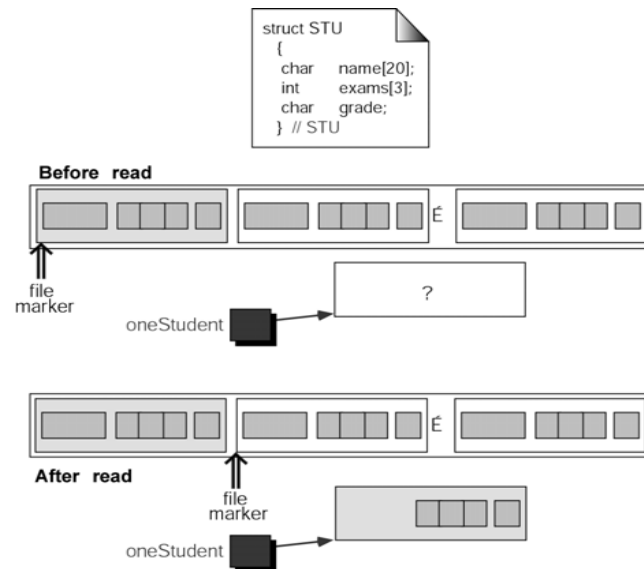
Read Operation



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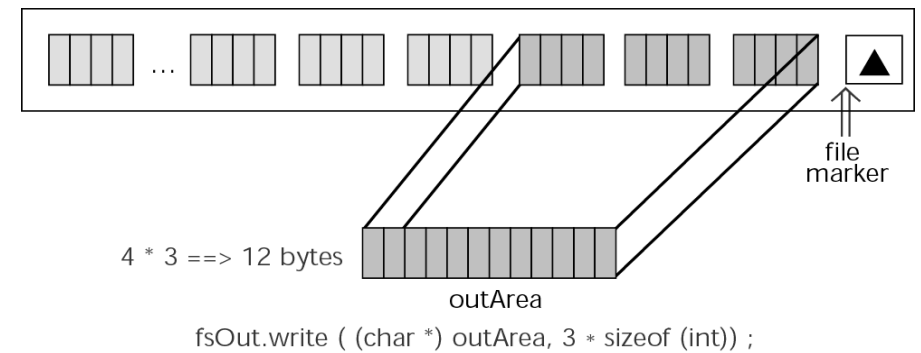
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Reading a Structure



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Write Operation

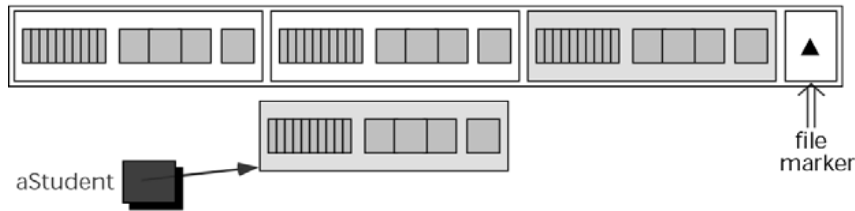
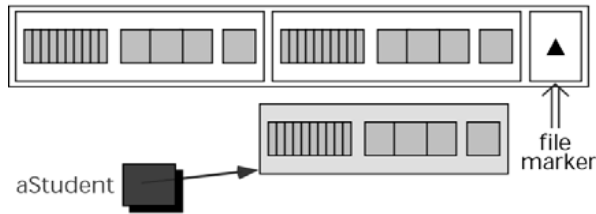


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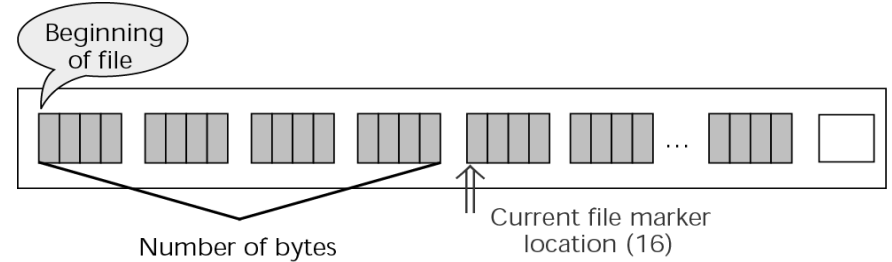
Writing a Structure

Before write

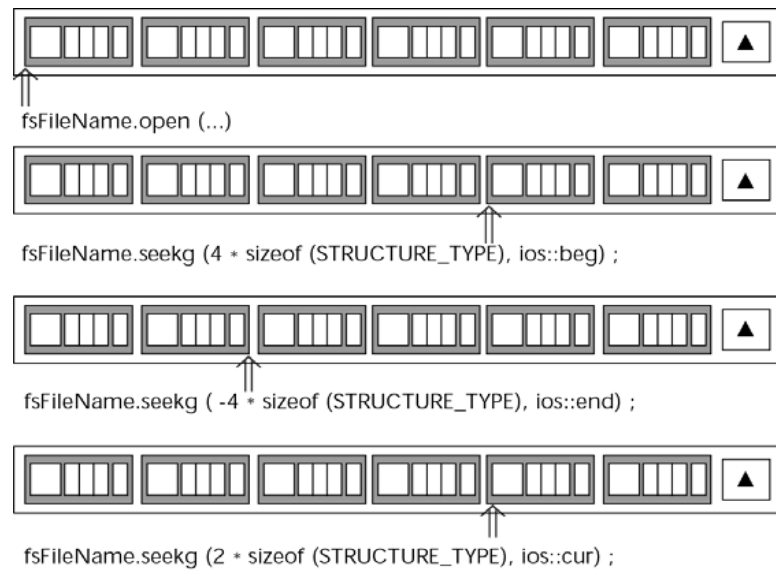


After write

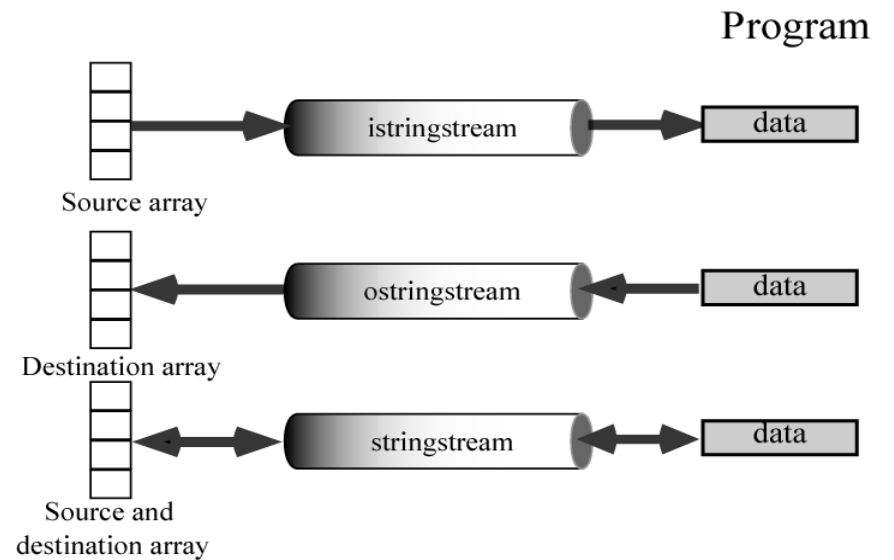
Tell Operation



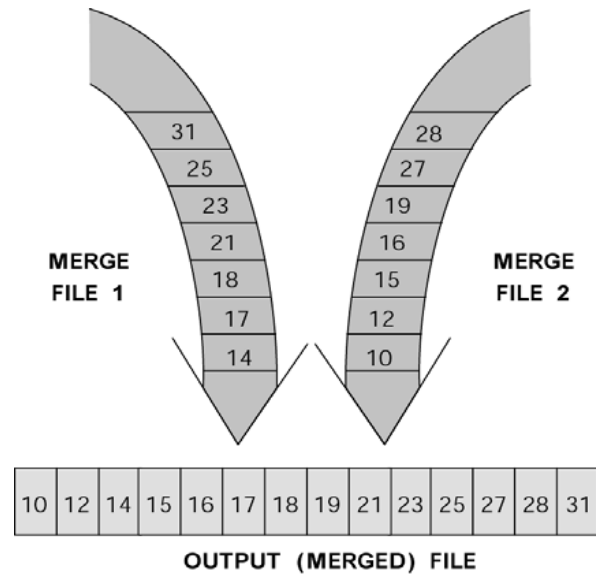
Seek Operation



Stringstream Objects

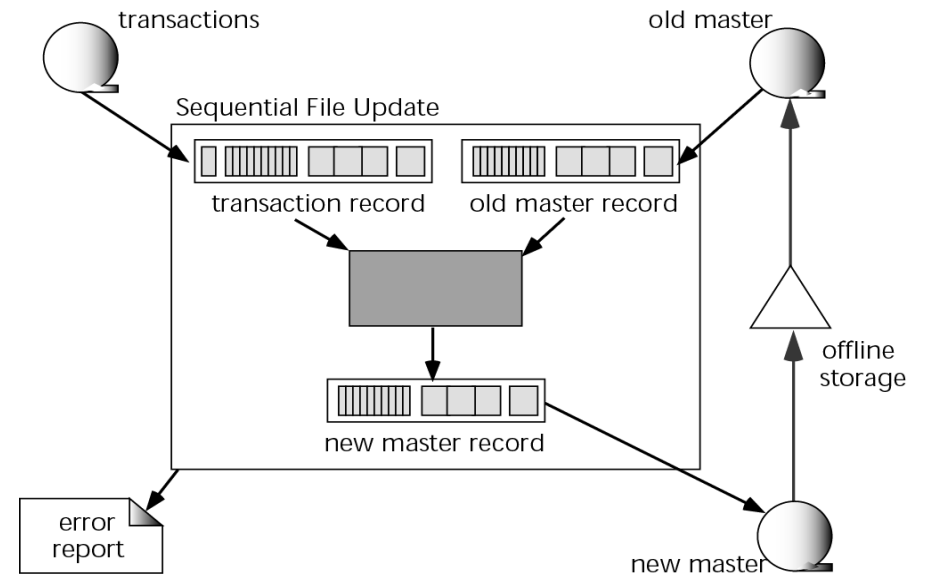


File Merge Concept



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Sequential File Update Environment



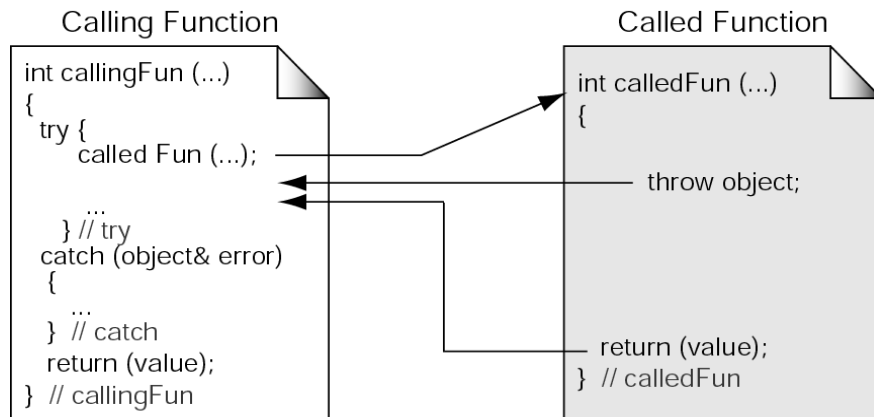
Exception Handling

Handling Error

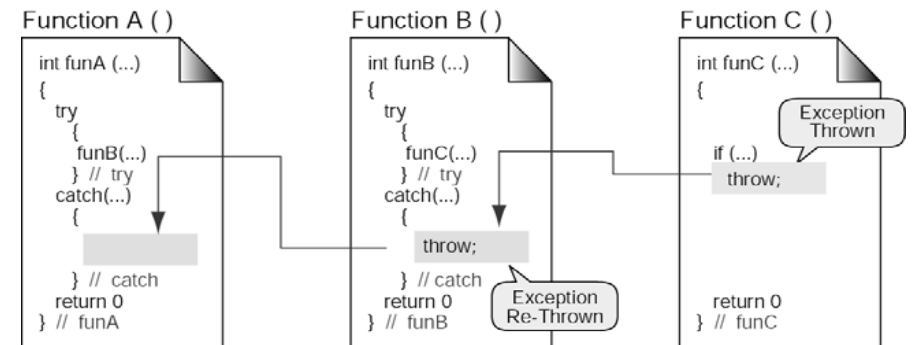
The Try and Catch Statements

```
try
{
    Code that contains logic to throw an exception
} // try
catch (error type)
{
    Exception handler
} // catch
```

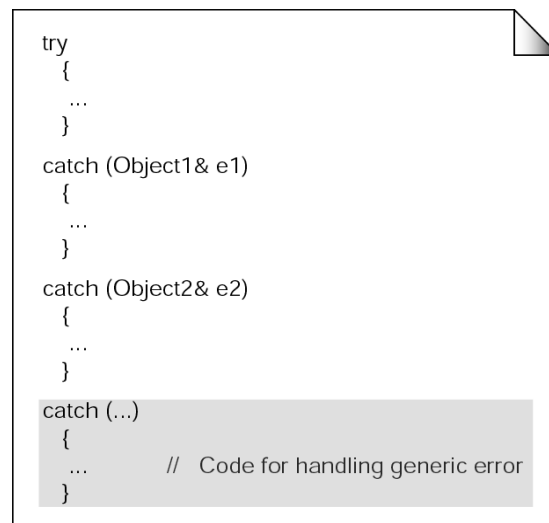

Throwing an Exception in a Separate Function



Re-throwing an Exception



Generic Exception Handler



Standard Exceptions

