



SRI AKILANDESWARI WOMEN'S COLLEGE, WANDIWASH

SWAPPING

Class: UG COMPUTER SCIENCE

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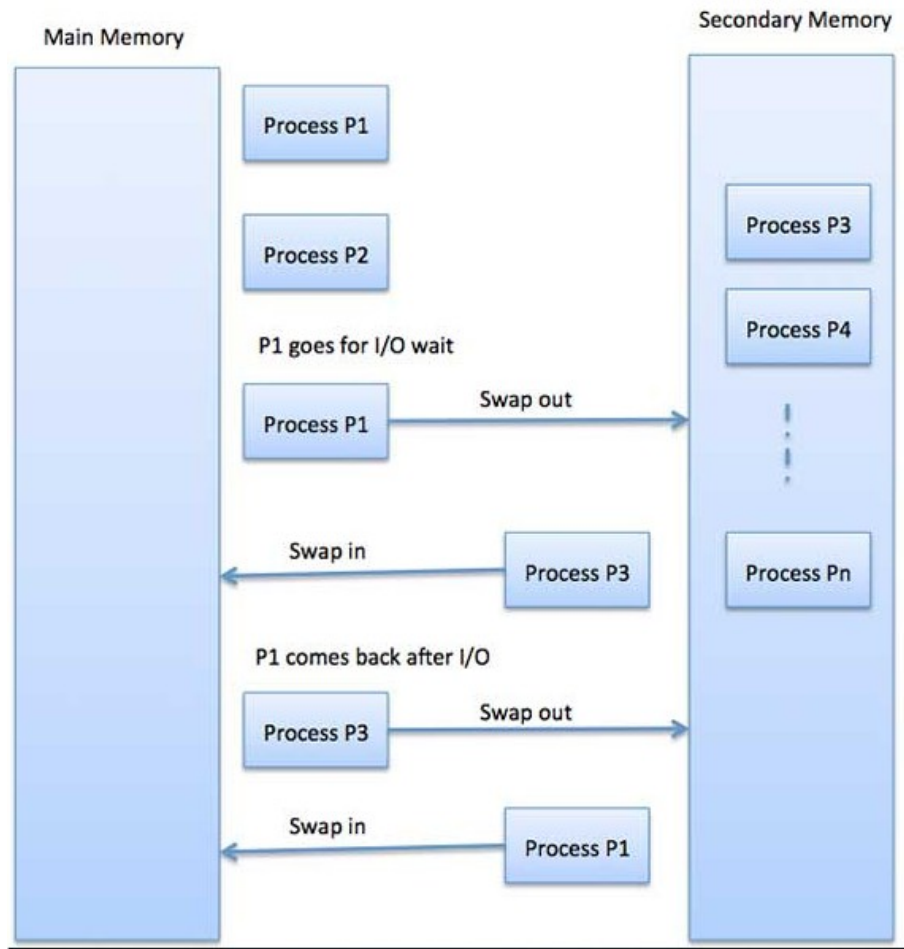
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Swapping

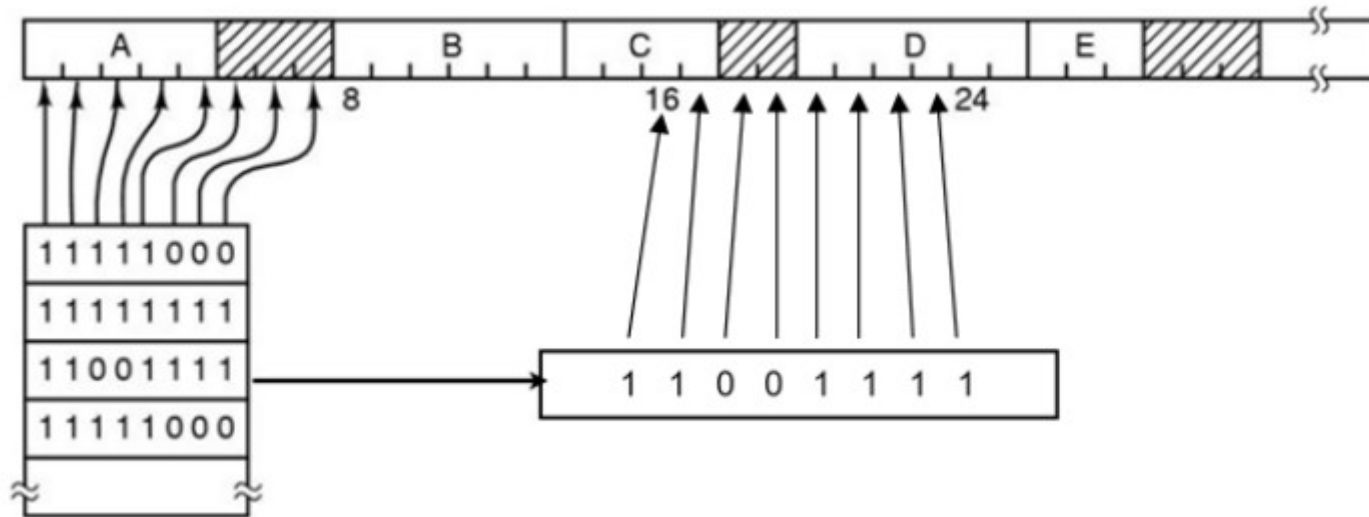
- ▶ Swapping is a mechanism in which a process can be swapped temporarily out of main memory (or move) to secondary storage (disk) and make that memory available to other processes.
- ▶ At some later time, the system swaps back the process from the secondary storage to main memory.
- ▶ Though performance is usually affected by swapping process but it helps in running multiple and big processes in parallel and that's the reason **Swapping is also known as a technique for memory compaction.**



Using bitmap

- ▶ A bitmap is a mapping from one system such as integers to bits. It is also known as bitmap index or a bit array.
- ▶ The memory is divided into units for bitmap. These units may range from a few bytes to several kilobytes. Each memory unit is associated with a bit in the bitmap.
- ▶ If the unit is occupied, the bit is 1 and if it is empty, the bit is zero.
- ▶ The bitmap provides a relatively easy way to keep track of memory as the size of the bitmap is only dependent on the size of the memory and the size of the units.

An image that clarifies the use of bitmap is as follows



Key Features of Bitmap

- ▶ Some important features of bitmap are –
- ▶ The unit size in bitmaps is very important and should be chosen with care.
- ▶ If the unit size is smaller, the bitmap will be larger as it will hold the value 0 or 1 for each of the units. Similarly, if the unit size is larger, bitmap will be smaller.
- ▶ The unit size need not be too large, as even with a unit size as small as 3 bytes, only one bit of the bitmap can represent 24 bits.,

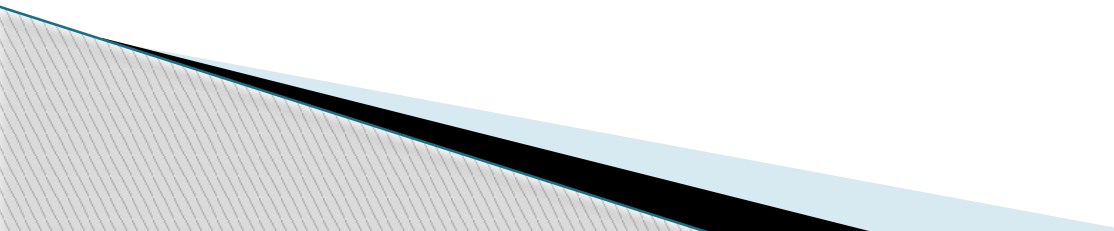
Advantage of Bitmap

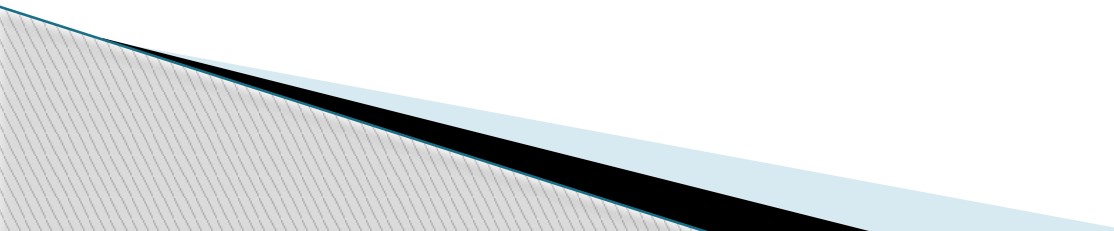
- ▶ The bitmap is quite useful as it provides a way to keep track of the memory using only a little memory for the bitmap table. The size of the bitmap is purely dependent on the size of the memory as well as the size of the memory unit.

Disadvantage of Bitmap

- ▶ A major problem in the bitmap occurs if a 'n' size memory block needs to be occupied by a process. Then a 'n' size vacancy is needed in the bitmap where the values are all zeroes.

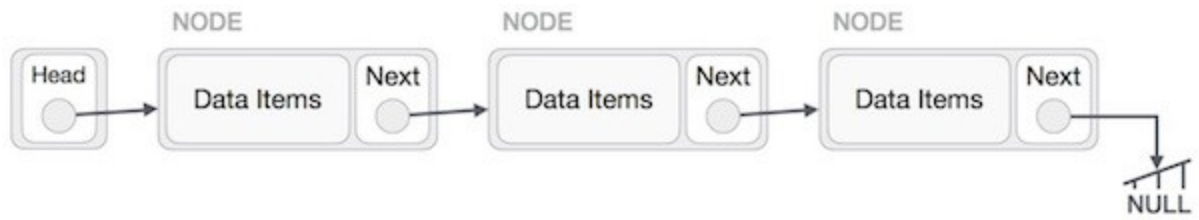
Linked List

- ▶ Linked List is a sequence of links which contains items.
 - ▶ Each link contains a connection to another link. Linked list is the second most-used data structure after array.
 - ▶ Following are the important terms to understand the concept of Linked List.
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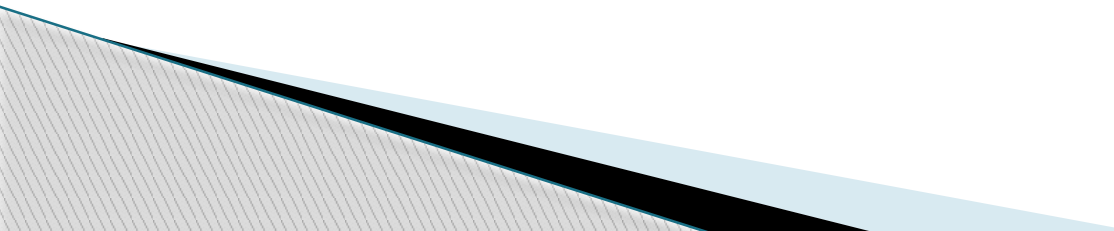
- ▶ **Link** – Each link of a linked list can store a data called an element.
 - ▶ **Next** – Each link of a linked list contains a link to the next link called Next.
 - ▶ **LinkedList** – A Linked List contains the connection link to the first link called First.
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Linked List Representation

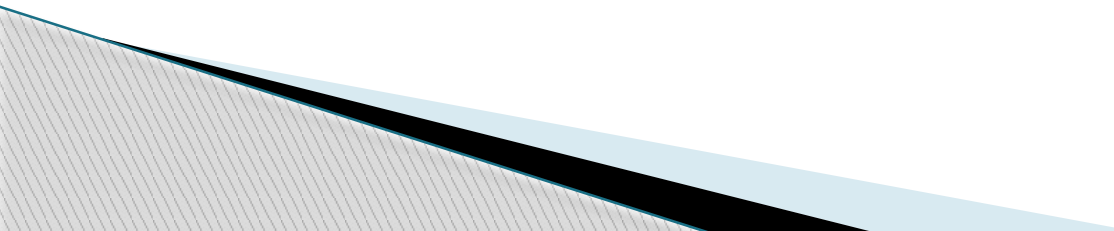
- ▶ Linked List Representation
- ▶ Linked list can be visualized as a chain of nodes, where every node points to the next node.



As per the above illustration, following are the important points to be considered

- ▶ Linked List contains a link element called *first*.
 - ▶ Each link carries a data field(s) and a link field called next.
 - ▶ Each link is linked with its next link using its next link.
 - ▶ Last link carries a link as null to mark the end of the list.
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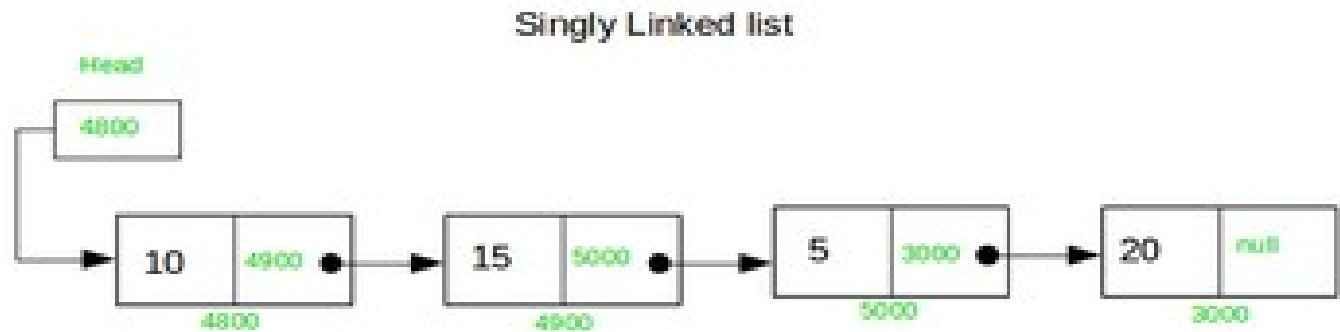
Types of Linked List

- ▶ **Simple Linked List** – Item navigation is forward only.
 - ▶ **Doubly Linked List** – Items can be navigated forward and backward.
 - ▶ **Circular Linked List** – Last item contains link of the first element as next and the first element has a link to the last element as previous.
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Simple Linked List

- ▶ A singly linked list is a special type of **linked list** in which each node has only one link that points to the next node in the linked list.

Simple Linked List



Singly linked list

Doubly Linked List

- ▶ Doubly linked list is **used in navigation systems or to represent a classic deck of cards**. A Doubly linked list is a bidirectional linked list

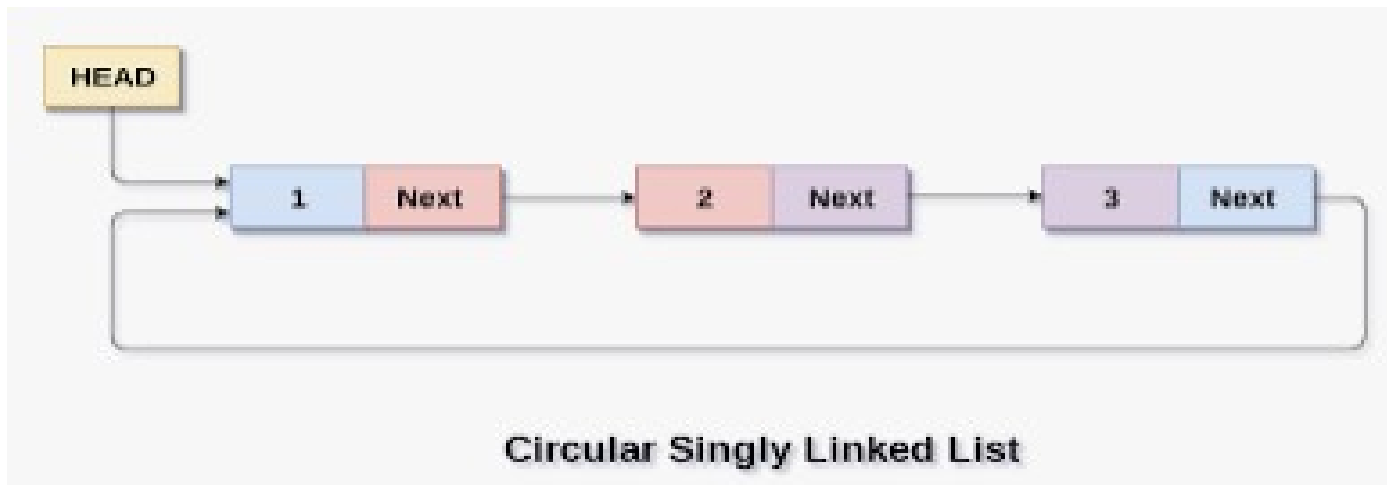
Doubly Linked List



Circular Linked List

- ▶ **Circular Linked List is a variation of a linked list where all the nodes are connected, forming a circle. This means that there is no NULL at the end.**

Circular Linked List



Thank you

