SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF INFORMATION TECHNOLOGY

DATASTRUCTURES
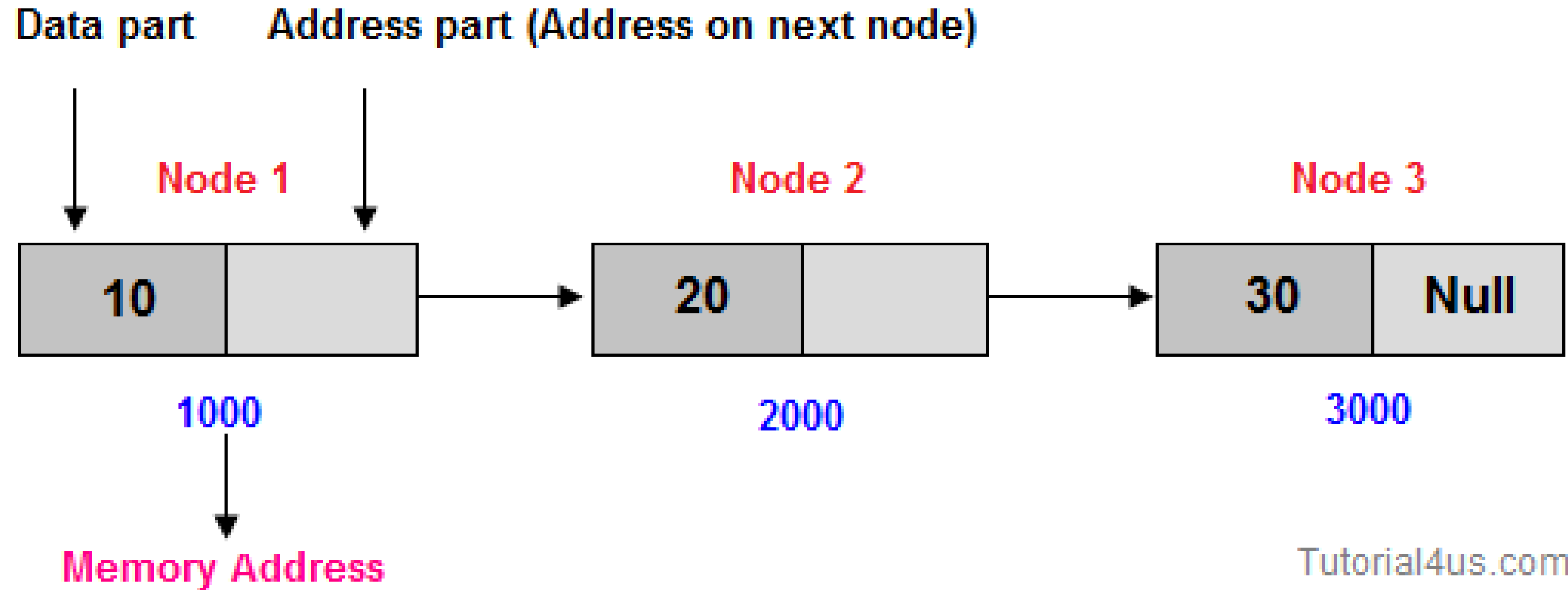
II YEAR III SEM

UNIT 1 –LINEAR STRUCTURES

TOPIC 3 – LINKED LIST

Definition

•Linked list is a special type of data structure where all data elements are

linked to one another

• It is the collection of nodes and every nodes contains two parts

- **Data part (Data Field)**

- **Address part (Address Field)**

Picture Source : picuki.com

Example

int   marks[50];

Problem:

But some time you need to store more than 50 students marks, in that case you can not increase memory of array, and some time you need to store less than 50 students marks in this case extra memory will be wastage.

Strategy:

To overcome this problem you need to use **Linked List** because in linked list memory will be created at run time.
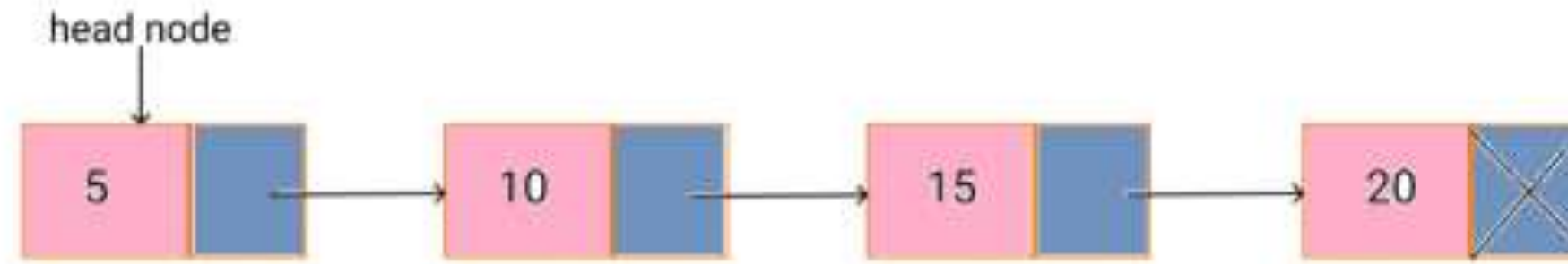
Limitations

Need more memory:

For store data in linked list you need more memory space, you need memory space for both data and address part.
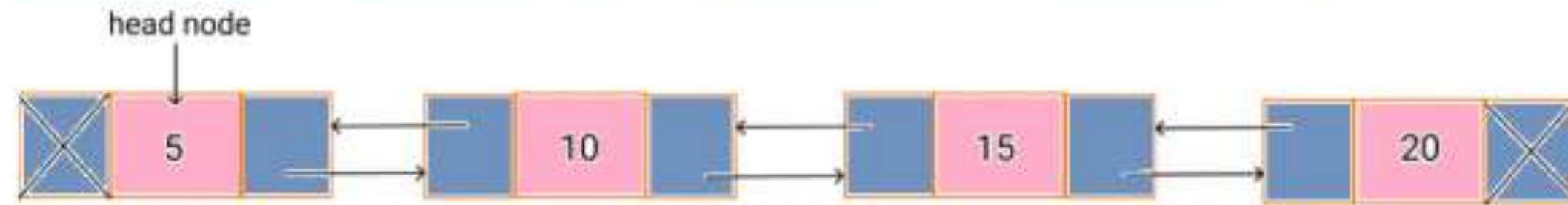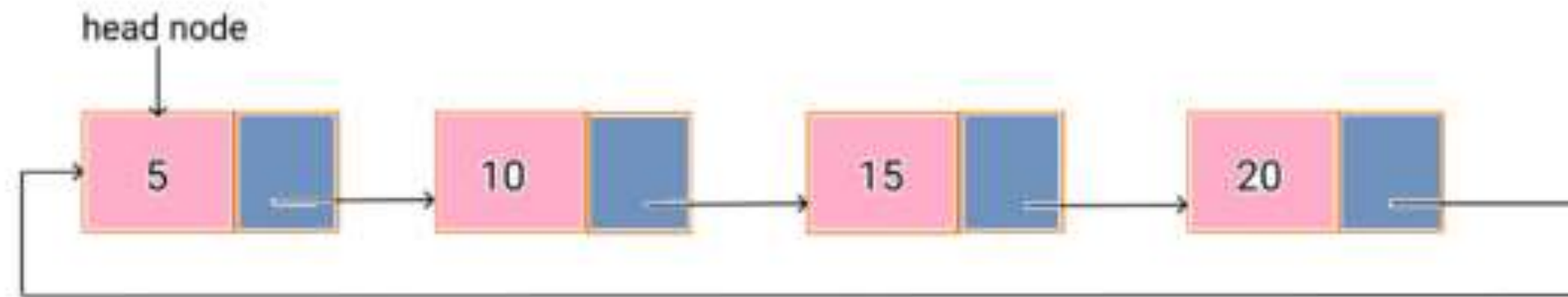
Types of Linked List

Singly Linked List

head node

| 5 | | 10 | | 15 | | 20 | |

Doubly Linked List

head node

| | 5 | | 10 | | 15 | | 20 | |

Circular Linked List

head node

| 5 | | 10 | | 15 | | 20 | |

Singly 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.