ABSTRACT DATA TYPES

COMPUTER ORGANIZATION
PCC-CS302

ARKAPRATIM GHOSH
13000121058
CSE-A

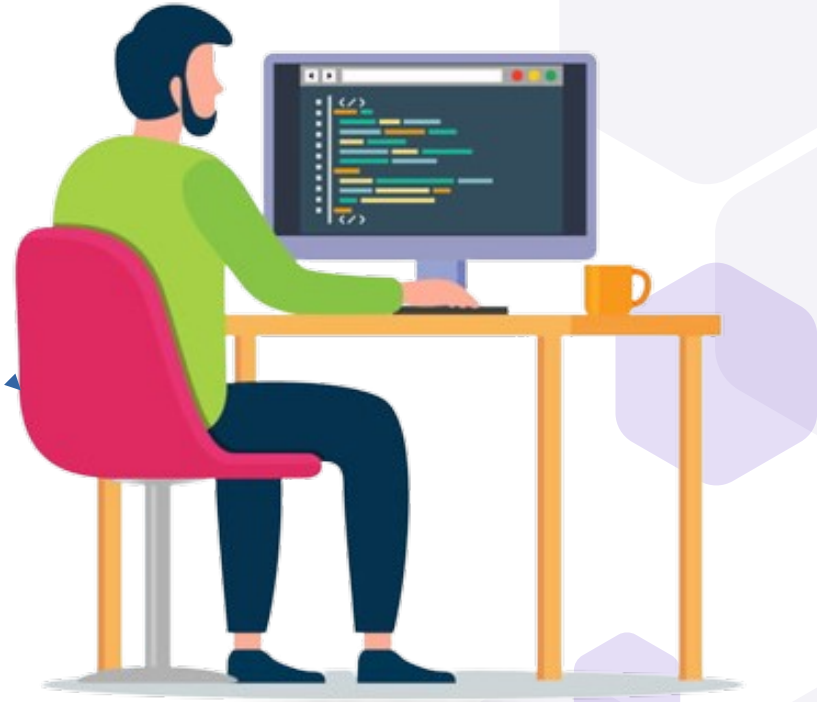
CONTENT

INTRODUCTION

- What is a datatype?
- User-defined datatype

ABSTRACT DATA TYPES

- DEFINITION
- IMPLEMENTATION
- ADVANATGES



1 INTRODUCTION

Let’s start with the basics

WHAT IS A DATATYPE ?

- A classification that indicates what a variable or object can hold
- Defines a certain **domain** of values
- Defines **operations** allowed on those values

int type – Takes integer values. Allows operations like addition, subtraction, multiplication, division etc.

USER DEFINED DATATYPE

The operations of user defined datatypes are specified by users

Examples:
structure, union, enumerations

By using structure we are defing our own datatype by combining other datatypes

```
struct student{
    int class;
    int roll;
}
```

2

ABSTRACT DATATYPES (ADTs)

What’s so abstract about it ?

DEFINITION AND IMPLEMENTATION

ADTs are like user defined datatypes which defines operations on values using **functions** without specifying what is there inside the functions and how operations are performed

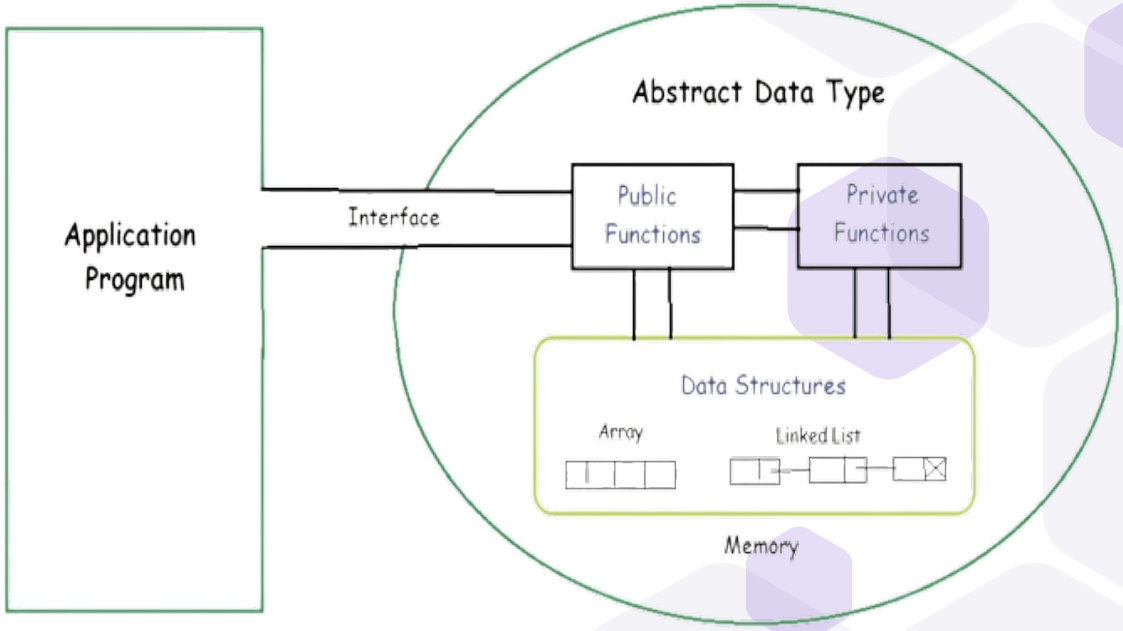
EXAMPLE: Stack ADT – consists of elements of same type arranged in a sequential order, implemented by using arrays and linkedlists

Operations: initialize()- initialising it to be empty.
push()- insert an element into the stack.
pop()- remove an element from the stack.
isEmpty()- checks if the stack is empty or not.
isFull()- checks if the stack is full or not.

ADVANTAGES

Acts as a black box and interface.
A user's actions are not affected if the underlying implementation of an ADT is changed as the client program has nothing to do with it.

ADT provides ABSTRACTION




THANK YOU