Solved Exercise: Tree Creation Using Array

Exercise:

Create a binary tree using an array representation and explain how the elements are stored.

Concept:

In array representation of a binary tree:
- Root is stored at index 0
- Left child of index i is at (2i + 1)
- Right child of index i is at (2i + 2)
- Parent of index i is at (i - 1) / 2

Given Tree:

A
/ \
B C
/ \
D E

Array Representation:

Index	0	1	2	3	4
Value	A	B	C	D	E

Advantages:

- Simple implementation
- Fast access to elements
- No pointers required

Disadvantages:

- Wastes memory for non-complete trees
- Not suitable for dynamic trees

Conclusion: Array representation is best for complete binary trees such as heaps.