# Scene 1: Introduction (Narrator)-> Praneeth

**Praneeth**:  Welcome to "Stacks of Support," a tale of friendship and learning. It's the night before the big exam, and one friend is feeling nervous. Let's dive into the world of stacks and see how his supportive friends come to the rescue.

## Scene 2: Afraid of exam

**Mohith**:  I'm so scared of this exam. What if I don't know the answers? What if I fail?

## Scene 3: Frd Help

**Mohan**: Hey Mohith, what's wrong?

**Mohith**: I'm scared of my exam tomorrow.

**Mohan**: Don't worry, you'll do great. What are you studying for?

**Mohith**: Stacks. But I don't really understand them.

**Mohan**: Well, I'm pretty good at stacks. Maybe I can help you learn them.

**Mohith**: Really? That would be great!

**Mohan**: No problem. Let's get started.

## Scene 4: What is a Stack?

**Mohith**: So, what is a stack exactly?

**Mohan**: A stack is a data structure that follows the Last in First Out (LIFO) principle. This means that the last element added to the stack is the first element to be removed.

**Mohith**: I see. So, it's like a stack of books in a cafeteria. The last book you put on the stack is the first book you take off.

**Mohan**: Exactly.

**Mohith: What are some of the uses for stacks?**

**Mohan: Stacks can be used to implement undo/redo functionality, to evaluate mathematical expressions, and to manage function calls.**

**Mohith: Yes, that's right. I understand the concept of LIFO**

**Mohan: Great. So, the three basic operations of a stack are push, pop, and peek.**

**Mohith: What is push?**

**Mohan: Push is the operation of adding an element to the top of the stack. The new element becomes the top element of the stack, and all of the other elements on the stack are moved down one position.**

**Mohith: I see. So, push is like adding a new plate to the top of a stack of plates.**

**Mohan: Exactly.**

**Mohith: What is pop?**

**Mohan: Pop is the operation of removing an element from the top of the stack. The top element of the stack is removed, and all of the other elements on the stack are moved up one position.**

**Mohith: I see. So pop is like taking the top plate off of a stack of plates.**

**Mohan: Correct.**

**Mohith: What is peek?**

**Mohan: Peek is the operation of viewing the element at the top of the stack without removing it.**

**Mohith: I see. So, peek is like looking at the top plate on a stack of plates without taking it off.**

**Mohan: That's right.**

Mohan: So, Mohith, you're interested in learning more about stacks. One of the most common uses for stacks is to convert infix expressions to postfix expressions.

Mohith: What is an infix expression?

Mohan: An infix expression is a mathematical expression where the operators are written between the operands. For example, the expression A + B is an infix expression.

Mohith: What is a postfix expression?

Mohan: A postfix expression is a mathematical expression where the operators are written after the operands. For example, the expression AB+ is a postfix expression.

Mohith: I see. So, a postfix expression is like a shorthand way of writing an infix expression?

Mohan: That's right. Postfix expressions are easier for computers to parse and evaluate than infix expressions. That's why they are often used in computer programming.

Mohith: Interesting. So how can we use a stack to convert an infix expression to a postfix expression?

Mohan: Let's see an example

# Scene 5: Chairs present

Mohith: So, Mohan, what does it mean?

Mohan: It's an underflow error.

Mohit: what is an underflow error?

Mohan: An underflow error is an error that occurs when we try to perform an operation on a data structure that is empty. For example, if we try to pop an element off of an empty stack, we will get an underflow error.

**Mohith: What is overflow?**

**Mohan: Overflow is a condition in which a computer program or data structure tries to access memory that is not allocated to it.**

**Mohith: Oh, I see. So overflow can occur when a program tries to do too much with too little memory?**

**Mohan: That's right. Overflow can also occur when a program recursively calls a function that uses a stack.**

**Scene 6: PUSHING ELEMENTS INTO INFIX**

| INDEX | ELEMENTS | MEMBERS |
|-------|----------|---------|
| 0 | A | DEVESH |
| 1 | + | PRANEETH |
| 2 | B | PRADEEP |
| 3 | * | RAHUL |
| 4 | C | SRINAG |

**A: Hi, I'm an operand, and my name is A. I'm the first number in the expression A + B * C. I'm waiting to be added to the product of B and C.**

**B: Hi, I'm an operand, and my name is B. I'm the second number in the expression A + B * C. I'm waiting to be multiplied by C.**

**C: Hi, I'm an operand, and my name is C. I'm the third number in the expression A + B * C. I'm waiting to be multiplied by B.**

**+: Hi, I'm an operator, and my name is addition. My job is to add two numbers together. I'm waiting for A and the product of B and C to be ready.**

**\*: Hi, I'm an operator, and my name is multiplication. My job is to multiply two numbers together. I'm waiting for B and C to be ready.**

**While pushing into the stack TOP (cap)**

Mohith: - What does the Cap represent?

Mohan: The cap in a stack is the topmost element in the stack. It is the element that was most recently pushed onto the stack, and it is the element that will be popped off the stack next.

## Scene 7:

## INFIX TO POSTFIX

| s.no | Infix expression | stack | Postfix |
|------|-----------------|-------|---------|
| 0 | A | | A |
| 1 | + | + | A |
| 2 | B | + | AB |
| 3 | * | +* | AB |
| 4 | C | +* | ABC |
| 5 | | | ABC*+ |

Mohith: Why should we have to convert expressions?

Mohan: Postfix expressions are easier for computers to evaluate, and can be used to implement stack-based calculators and generate machine code.

## Scene 8: The Exam

Mohith: Thanks for helping me study yesterday. I feel much better now.

Mohan: No problem. I'm glad I could help.

Mohith: I passed!

Mohan: Me too!

Mohith: Thanks for your help. I couldn't have done it without you.

Mohan: You're welcome. I'm glad I could help.

(Mohith and Mohan hug each other.)

## Scene 9:

Praneeth: And that's the end of our play. Thank you for watching!

## Beautiful Ending

Mohith and Mohan continue to be friends and help each other with their studies. They both do well in their classes, and they both go on to successful careers. Mohith never forgets the time that Mohan helped him overcome his fear of stacks and exams.