Jawahar Education Societys Annasaheb Chudaman Patil College of Engineering, Kharghar, Navi Mumbai

NAME: PRIYUSH BHIMRAO KHOBRAGADE

PRN NO: 211112018

SUBJECT: DATA STRUCTURES LAB

AIM: Applications of Stack ADT.

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Practical No :-04

Aim :- Applications of Stack ADT (Reverse the string)

Theory :-

- **Reverse a string :-**

A stack can be used to reverse the character of a string. This can be achieved by simply pushing one by one each character onto the stack, which later can be popped from the stack one by one. last in first out property of the stack, the first character of the stack is on the bottom of the stack and the last character of the string is on the top of stack - and after performing the pop operation in the stack, the stack return the string in reverse order.

- **Algorithm for Reverse a string**

1) Initialize a string of length n.
2) Create a stack of the same size to store the characters.
3) Traverse the string and push each and every character into stack one by one.
4) Traverse again and start popping the characters out and concatenate them together into a string.
5) print the reversed string.

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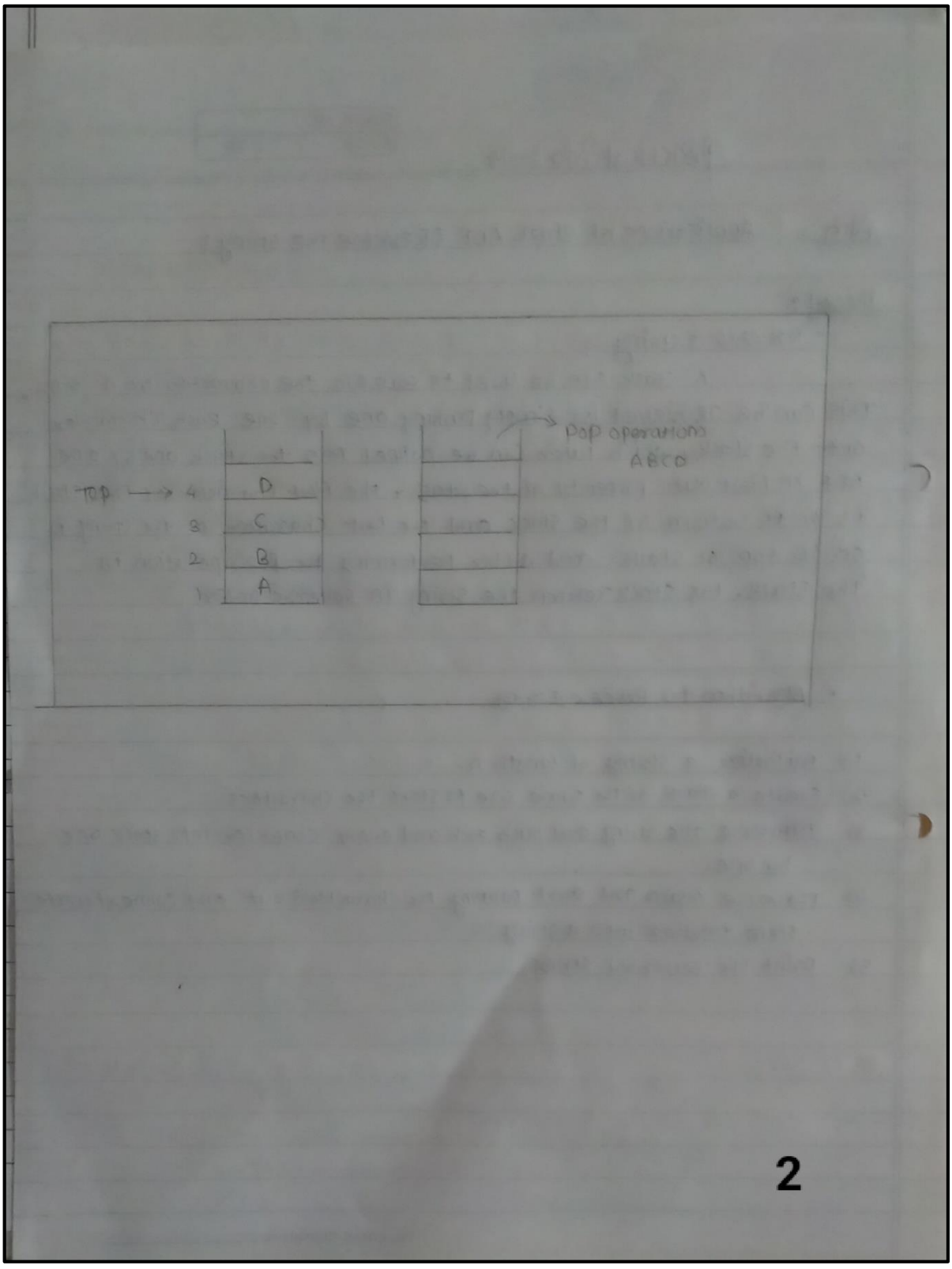

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• Application of stack

1) Evaluation of Arithmatic Expression
2) Backtracking
3) Delimiter Checking
4) Reverse a Data
5) Processing function calls.
6) Memory management
7) Syntax parsing
8) Java virtual Machine uses a stack.

Conclusion :-

Hence, we understanding about Application of stack

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Input:-

```
#include<stdio.h>
#include<string.h>
#define size 20
int top = -1;
char stack[size];

char push(char ch)      // Push(Inserting Element in stack) operation
{
 if(top==(size-1))
  printf("Stack is Overflow\n");
 else
  stack[++top]=ch;
}
char pop()      // pop operation
{
 if(top==-1)
  printf("Stack is Underflow\n");
 else
  return stack[top--];
}
int main()
{
 char str[20];
 int i;
 printf("Enter the string : \n" );
 gets(str);
 for(i=0;i<strlen(str);i++)
 {
  push(str[i]);
 }
 for(i=0;i<strlen(str);i++)
 {
     str[i]=pop();
 }
 printf("Reversed string is : ");
 puts(str);

}
```

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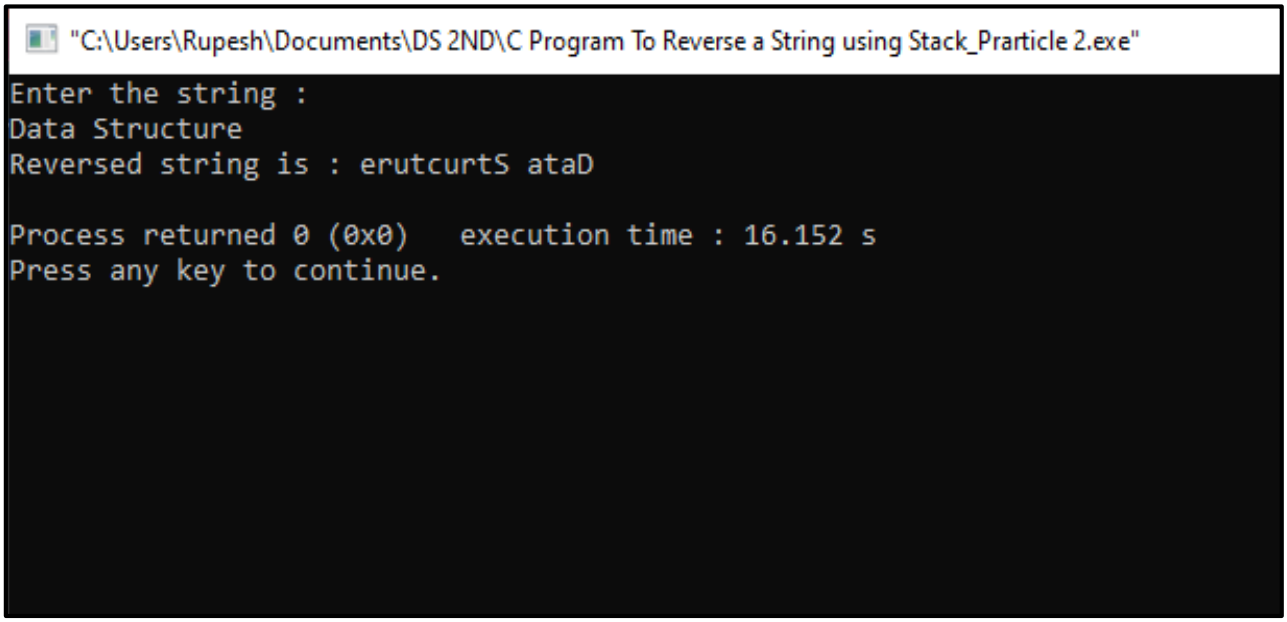
Output:-



Conclusion: - Hence, we can understanding about different application of stack.