

Rajalakshmi Engineering College

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NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 3_MCQ_Updated

Attempt : 1
Total Mark : 20
Marks Obtained : 20

Section 1 : MCQ

1. Consider a linked list implementation of stack data structure with three operations:

push(value): Pushes an element value onto the stack.
pop(): Pops the top element from the stack.
top(): Returns the item stored at the top of the stack.

Given the following sequence of operations:

push(10);pop();push(5);top();

What will be the result of the stack after performing these operations?

Answer

The top element in the stack is 5

Status : Correct

Marks : 1/1

2. Elements are Added on _____ of the Stack.

Answer

Top

Status : Correct

Marks : 1/1

3. Consider the linked list implementation of a stack.

Which of the following nodes is considered as Top of the stack?

Answer

First node

Status : Correct

Marks : 1/1

4. Pushing an element into the stack already has five elements. The stack size is 5, then the stack becomes

Answer

Overflow

Status : Correct

Marks : 1/1

5. What will be the output of the following code?

```
#include <stdio.h>
#define MAX_SIZE 5
void push(int* stack, int* top, int item) {
    if (*top == MAX_SIZE - 1) {
        printf("Stack Overflow\n");
        return;
    }
    stack[++(*top)] = item;
}
int pop(int* stack, int* top) {
    if (*top == -1) {
        printf("Stack Underflow\n");
```

```

    return -1;
}
return stack[(*top)--];
}

int main() {
    int stack[MAX_SIZE];
    int top = -1;
    push(stack, &top, 10);
    push(stack, &top, 20);
    push(stack, &top, 30);
    printf("%d\n", pop(stack, &top));
    printf("%d\n", pop(stack, &top));
    printf("%d\n", pop(stack, &top));
    printf("%d\n", pop(stack, &top));
    return 0;
}

```

Answer

302010Stack Underflow-1

Status : Correct

Marks : 1/1

6. What is the value of the postfix expression 6 3 2 4 + - *?

Answer

-18

Status : Correct

Marks : 1/1

7. The user performs the following operations on the stack of size 5 then at the end of the last operation, the total number of elements present in the stack is

```

push(1);
pop();
push(2);
push(3);

```

```
pop();  
push(4);  
pop();  
pop();  
push(5);
```

Answer

1

Status : Correct

Marks : 1/1

8. In a stack data structure, what is the fundamental rule that is followed for performing operations?

Answer

Last In First Out

Status : Correct

Marks : 1/1

9. The result after evaluating the postfix expression $10\ 5 + 60\ 6 / * 8 -$ is

Answer

142

Status : Correct

Marks : 1/1

10. What is the advantage of using a linked list over an array for implementing a stack?

Answer

Linked lists can dynamically resize

Status : Correct

Marks : 1/1

11. In the linked list implementation of the stack, which of the following operations removes an element from the top?

Answer

Pop

Status : Correct

Marks : 1/1

12. What is the primary advantage of using an array-based stack with a fixed size?

Answer

Efficient memory usage

Status : Correct

Marks : 1/1

13. A user performs the following operations on stack of size 5 then which of the following is correct statement for Stack?

```
push(1);  
pop();  
push(2);  
push(3);  
pop();  
push(2);  
pop();  
pop();  
push(4);  
pop();  
pop();  
push(5);
```

Answer

Underflow Occurs

Status : Correct

Marks : 1/1

14. When you push an element onto a linked list-based stack, where does the new element get added?

Answer

At the beginning of the list

Status : Correct

Marks : 1/1

15. Here is an Infix Expression: $4+3*(6*3-12)$. Convert the expression from Infix to Postfix notation. The maximum number of symbols that will appear on the stack AT ONE TIME during the conversion of this expression?

Answer

4

Status : Correct

Marks : 1/1

16. What will be the output of the following code?

```
#include <stdio.h>
#define MAX_SIZE 5
int stack[MAX_SIZE];
int top = -1;
int isEmpty() {
    return (top == -1);
}
int isFull() {
    return (top == MAX_SIZE - 1);
}
void push(int item) {
    if (isFull())
        printf("Stack Overflow\n");
    else
        stack[++top] = item;
}
int main() {
    printf("%d\n", isEmpty());
    push(10);
    push(20);
    push(30);
    printf("%d\n", isFull());
    return 0;
}
```

}

Answer

10

Status : Correct

Marks : 1/1

17. Which of the following operations allows you to examine the top element of a stack without removing it?

Answer

Peek

Status : Correct

Marks : 1/1

18. What will be the output of the following code?

```
#include <stdio.h>
#define MAX_SIZE 5
int stack[MAX_SIZE];
int top = -1;
void display() {
    if (top == -1) {
        printf("Stack is empty\n");
    } else {
        printf("Stack elements: ");
        for (int i = top; i >= 0; i--) {
            printf("%d ", stack[i]);
        }
        printf("\n");
    }
}
void push(int value) {
    if (top == MAX_SIZE - 1) {
        printf("Stack Overflow\n");
    } else {
        stack[++top] = value;
    }
}
```

```
}  
int main() {  
    display();  
    push(10);  
    push(20);  
    push(30);  
    display();  
    push(40);  
    push(50);  
    push(60);  
    display();  
    return 0;  
}
```

Answer

Stack is empty
Stack elements: 30 20 10
Stack Overflow
Stack elements: 50 40 30
20 10

Status : Correct

Marks : 1/1

19. Which of the following Applications may use a Stack?

Answer

All of the mentioned options

Status : Correct

Marks : 1/1

20. In an array-based stack, which of the following operations can result in a Stack underflow?

Answer

Popping an element from an empty stack

Status : Correct

Marks : 1/1