Ganpat University
Faculty of Engineering & Technology
Computer Science & Engineering

Practical_3

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Sem:- 3
Sub: - DS(Data Steucture)
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3) Use of Stack

Ankit is a 5-year-old kid, who is playing in a boardroom with a basket and balls. Each ball is having numbered on it like 1, 2, 3, …, 9. Ankit's aunt asked him to put all boll inside the basket.

Here, the scenario is that basket is long enough to hold all balls but squeezed in width and can hold only one boll at a time. When the next ball is inserted, then that ball can lie on top of the old boll like this way.

- Push ball numbered as 1 inside the basket
- Push ball numbered as 8 inside the basket
- Push ball numbered as 9 inside the basket
- Push ball numbered as 7 inside the basket
- Push ball numbered as 2 inside the basket
- Pop ball from the basket
- Pop ball from the basket
- Push ball numbered as 3 inside the basket

Code:

```c
#include <stdio.h>

#define Dwij 9  //Here 'Dwij' mean MAX VALUE

int array[Dwij];
int top = -1;

int isFull() {
    return top == Dwij - 1;
}

int isEmpty() {
    return top == -1;
}

void push(int value) {
    if (isFull()) {
        printf("Stack is full! Cannot push(Overflow) %d\n", value);
    } else {
        array[++top] = value;
        printf("Pushed %d onto the top of stack\n", value);
    }
}

void pop() {
    if (isEmpty()) {
        printf("Stack is empty! Cannot pop(Underflow)\n");
    } else {
        int value = array[top--];
        printf("Popped %d from the top of stack\n", value);
    }
}

void display() {
    if (isEmpty()) {
        printf("Stack is empty!(Underflow)\n");
    } else {
        printf("Stack elements: ");
        for (int i = 0; i <= top; i++) {
            printf("%d ", array[i]);
        }
        printf("\n");
    }
}

int main() {
    push(1);
    push(8);
```

```
    push(9);
    push(7);
    push(2);
    display();

    pop();
    pop();
    display();

    push(3);
    display();

    return 0;
}
```

Image(Output):

```
PS C:\Users\dwijd\OneDrive\Documents\collage practicals\DS> cd "c:\Users\
Pushed 1 onto the top of stack
Pushed 8 onto the top of stack
Pushed 9 onto the top of stack
Pushed 7 onto the top of stack
Pushed 2 onto the top of stack
Stack elements: 1 8 9 7 2
Popped 2 from the top of stack
Popped 7 from the top of stack
Stack elements: 1 8 9
Pushed 3 onto the top of stack
Stack elements: 1 8 9 3
PS C:\Users\dwijd\OneDrive\Documents\collage practicals\DS\Practical_3>
```