Q.6

**package** com.example.Ass3;

**import** java.util.Scanner;

**public** **class** Q6 {

**int** size = 5;

**int** arr[];

**int** rear;

**int** front;

**int** arrDequeue[];

**int** dequeueIndex;

**public** Q6() {

**this**.rear = -1;

**this**.front = -1;

arr = **new** **int**[size];

arrDequeue = **new** **int**[size];

**this**.dequeueIndex = 0;

}

**boolean** isEmpty() {

**return** (front == -1 && rear == -1);

}

**boolean** isFull() {

**return** rear ==size-1;

}

// enqueue

**public** **void** enqueue(**int** data) {

**if** (isFull()) {

System.***out***.println("Queue is full");

}

**if** (front == -1) {

front = 0;

}

rear++;

arr[rear] = data;

System.***out***.println(data + " enqueued to the queue");

}

// dequeue

**public** **void** dequeue() {

**if** (isEmpty()) {

System.***out***.println("Queue is empty");

} **else** {

**int** x = arr[front];

System.***out***.println("Dequeued element= " + x);

**if** (front > rear) {

front = -1;

rear = -1;

} **else** {

front++;

}

}

}

**public** **void** display() {

System.***out***.println("Queue=[");

**if** (isEmpty()) {

System.***out***.println("]");

} **else** {

**for** (**int** i = front; i <= rear; i++) {

System.***out***.print(arr[i]);

**if** (i < rear) {

System.***out***.print(",");

}

}

System.***out***.println("]");

}

System.***out***.println(", Dequeued elements ");

**if** (dequeueIndex == 0) {

System.***out***.print("[]");

} **else** {

System.***out***.print("[");

**for** (**int** i = 0; i < dequeueIndex; i++) {

System.***out***.print(arrDequeue[i]);

**if** (i < dequeueIndex - 1) {

System.***out***.print(",");

}

}

System.***out***.print("]");

}

System.***out***.println();

}

**public** **static** **void** main(String[] args) {

Q6 q = **new** Q6();

Scanner sc = **new** Scanner(System.***in***);

**int** choice, element;

**do** {

System.***out***.println("\nMenu:");

System.***out***.println("1. Enqueue");

System.***out***.println("2. Dequeue");

System.***out***.println("3. Display Queue");

System.***out***.println("4. Exit");

System.***out***.println("Enter your choice: ");

choice = sc.nextInt();

**switch** (choice) {

**case** 1:

System.***out***.println("Enqueue");

element = sc.nextInt();

q.enqueue(element);

**break**;

**case** 2:

System.***out***.println("Dequeued elements");

q.dequeue();

**break**;

**case** 3:

// System.out.println("Display queue");

q.display();

**break**;

**default**:

System.***out***.println("Invalid choice");

}

} **while** (choice != 4);

sc.close();

}

}

Q.1

**package** com.example.Ass3;

**import** java.util.Scanner;

**class** Stack {

Scanner sc = **new** Scanner(System.***in***);

**int** top = -1;

**int** size = sc.nextInt();

**int** data;

**int** arr[] = **new** **int**[size];

**public** **boolean** isEmpty() {

**return** top == -1;

}

**public** **boolean** isFull() {

**return** top > size;

}

**public** **int** push(**int** data) {

**if** (isFull()) {

System.***out***.println("Stack is full" + data);

} **else** {

top++;

arr[top] = data;

**return** arr[top];

}

**return** data;

}

**public** **void** pop() {

**if**(isEmpty()) {

System.***out***.println("Stack is empty");

}

**else** {

**int** poppedElement=arr[top];

System.***out***.println("Popped element is "+poppedElement);

top--;

}

}

**public** **int** peek() {

**if**(isEmpty()) {

System.***out***.println("Stack is empty");

**return** -1; //for empty stack

}

**else** {

**return** arr[top];

}

}

**public** **void** display() {

**if**(isEmpty()) {

System.***out***.println("Stack is empty");

}

**for**(**int** i=0; i<=top; i++) {

System.***out***.println();

System.***out***.println("Stack=["+arr[i]+"]");

}

}

}

**public** **class** Q1 {

**public** **static** **void** main(String[] args) {

Stack s = **new** Stack();

s.push(10);

s.push(20);

s.push(30);

s.push(40);

s.display();

System.***out***.println("Top element peeked "+s.peek());

System.***out***.println("\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_");

s.pop();

s.display();

}

}