3.NO. 10

Aim:

Write a program to implement queue using arrays.

representation

```
Sample Input and Output:
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option: 1
        Enter element : 23
        Successfully inserted.
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option : 1
        Enter element : 56
        Successfully inserted.
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option : 3
        Elements in the queue : 23 56
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option : 4
        Queue is not empty.
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option : 5
        Queue size : 2
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option : 2
        Deleted element = 23
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option : 2
        Deleted element = 56
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option : 4
        Queue is empty.
        1. Enqueue 2. Dequeue 3. Display 4. Is Empty 5. Size 6. Exit
        Enter your option : 6
```

Exp. Name: Write a C program to implement different Operations on Queue using Array

Source Code:

QueueUsingArray.c

```
#include <conio.h>
#include <stdio.h>
#include "QueueOperations.c"
int main() {
   int op, x;
   while(1) {
      printf("1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit\n");
      printf("Enter your option : ");
      scanf("%d",&op);
      switch(op) {
        case 1:
            printf("Enter element : ");
            scanf("%d",&x);
            enqueue(x);
```

```
break;
         case 2:
             dequeue();
             break;
         case 3:
             display();
             break;
         case 4:
             isEmpty();
             break;
         case 5:
             size();
             break;
         case 6: exit(0);
      }
   }
}
```

QueueOperations.c

```
#include<stdio.h>
#define MAX 10
int queue[MAX];
int count=0,rear=-1,front=-1;
void enqueue(int x)
{
   if(rear==MAX-1)
   printf("Queue is overflow");
   else
   {
      if(front==-1)
         front++;
      rear++;
      count++;
      queue[rear]=x;
      printf("Successfully inserted.\n");
   }
}
void dequeue()
   if(front==-1||front>rear)
   printf("Queue is underflow.\n");
   else
   {
      printf("Deleted element = %d\n",queue[front]);
      front++;
      count --;
   }
void display()
   int i;
   if(count==0)
```

```
printf("Queue is empty.\n");
else
{
   printf("Elements in the queue : ");
   for(i=front;i<=rear;i++)</pre>
   printf("%d ",queue[i]);
   printf("\n");
}
}
void isEmpty()
   if(count==0)
      printf("Queue is empty.\n");
      else
      printf("Queue is not empty.\n");
   }
   void size()
      if(count==0)
      printf("Queue size : %d\n",count);
   printf("Queue size : %d\n",count);
```

Execution Results - All test cases have succeeded!

Test Case - 1

```
User Output
1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 2
Enter your option : 2
Queue is underflow. 3
1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 3
Enter your option : 3
Queue is empty. 4
1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 4
Enter your option : 4
Queue is empty. 5
1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 5
Enter your option : 5
Queue size : 01
1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 1
Enter your option :
Enter element : 14
Successfully inserted. 1
1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 1
Enter your option : 1
Enter element : 78
Successfully inserted. 1
1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 1
Enter your option : 1
Enter element : 53
Successfully inserted. 3
1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 3
```

Enter your option : 3 Elements in the queue : 14 78 53 5 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 5 Enter your option : 5 Queue size : 36 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 6 Enter your option : 6

User Output 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 1 Enter your option: 1 Enter element: 25 Successfully inserted. 2 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 2 Enter your option: 2 Deleted element = 25 2 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 2 Enter your option: 2 Queue is underflow. 3 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 3 Enter your option: 3 Queue is empty. 1 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 1 Enter your option: 1 Enter element: 65 Successfully inserted. 3 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 3 Enter your option: 3 Elements in the queue: 65 4 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 4 Enter your option: 4 Queue is not empty. 2 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 4 Enter your option: 4 Queue is not empty. 2 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 4 Enter your option: 4 Queue is not empty. 2 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 4 Enter your option: 4 Queue is empty. 5 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 4 Enter your option: 5 Queue size : 01 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 5 Enter your option: 5 Queue size: 01 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 5 Enter your option: 5 Queue size: 01 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 5 Enter your option: 5 Queue size: 01 1.Enqueue 2.Dequeue 3.Display 4.Is Empty 5.Size 6.Exit 5 Enter your option: 1 Enter your option: 5 Queue size: 06 Queue size: 16	Test Case - 2
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