Q: CIRCULAR QUEUE

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#include <stdio.h>
#include <stdlib.h>
#define size 20
int queue[size];
int f = -1, r = -1;
void push(int);
void pop();
void display();
int main()
{
   int ch;
   int n;
   do
   {
      printf("Press 1 to push\n");
      printf("Press 2 to pop\n");
      printf("Press 3 to display\n");
      printf("Press 4 to exit\n");
      scanf("%d", &ch);
      switch (ch)
      {
      case 1:
         printf("Enter the element to push: ");
         scanf("%d", &n);
         push(n);
         break;
      case 2:
         pop();
         break;
      case 3:
         display();
         break;
      case 4:
         break;
      default:
         printf("WRONG CHOICE\n");
```

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        }
    } while (ch != 4);
    return 0;
}
void push(int val)
{
    if ((f == 0 && r == size - 1) || (r + 1 == f)){
        printf("OVERFLOW\n");
        return;
    }
    if (f == -1) f = r = 0;
    else if (f != 0 && r == size - 1) r = 0;
    else r++;
    queue[r] = val;
}
void pop()
{
    if (f == -1){
        printf("UNDERFLOW\n");
        return;
    }
    printf("%d is popped\n", queue[f]);
    if (f == r) f = r = -1;
    else if (f == size - 1) f = 0;
    else f++;
}
void display()
{
    if (f == -1){
        printf("UNDERFLOW\n");
        return;
    }
    if (f < r){
        for (int i = f; i <= r; i++) printf("%d\n", queue[i]);
    }
    else{
        for (int i = f; i < size; i++) printf("%d\n", queue[i]);
```

```
        for (int i = 0; i <= r; i++) printf("%d\n", queue[i]);
    }
}
```

OUTPUT:

INPUT: (Choice)	OUTPUT:
	*** Queue Menu *** 1.Push 2.Pop 3.Display 4.Exit
1	Enter element to push: 65
1	Enter element to push: 25
1	Enter element to push: 39
3	65 25 39
2	65 is popped
3	25 65