1) Design, Develop and Implement a Program in C for converting an Infix Expression to Postfix Expression.

Program should support for both parenthesized and free parenthesized expressions with the operators: +, -, *, /, %(Remainder), ^(Power) and alphanumeric operands.

ALGORITHM:

Step 1: Read the infix expression as a string.
Step 2: Scan the expression character by character till the end. Repeat the following operations

If it is an operand add it to the postfix expression.
If it is a left parenthesis push it onto the stack.

If it is a right parentheses pop out elements from the stack and assign it to the postfix string. Pop out the left parentheses but dont assign to postfix.

Step 3: If it is an operator compare its precedence with that of the element at the top of stack.

1.If it is greater push it onto the stack.

2.Else pop and assign elements in the stack to the postfix expression until you find one such element.

Step 4: If you have reached the end of the expression, pop out any leftover elements in the stack till it becomes empty.

Step 5: Append a null terminator at the end display the result.

2) Design, Develop and Implement a menu driven Program in C for the following operations onCircular QUEUE of Characters (Array Implementation of Queue with maximum size MAX)

a. Insert an Element on to Circular QUEUE
b. Delete an Element from Circular QUEUE
c. Demonstrate Overflow and Underflows ituations on Circular QUEUE
d. Display the status of Circular QUEUE
e. Exit

Support the program with appropriate functions for each of the above operations

ALGORITHM:
Step1: Initialize front and rear pointer and also count
front-> 0, count<- 0,rear<- -1
Step2: Insert an element into queue before check overflow condition Count=max
Insert an element rear<-(rear+1) %max
q[rear]<- item and count=count+1

Step3: Delete an element from queue .check underflow condition Count=0 underflow condition. Count<-count-1
Item<- q[front] Deleted element

Step4: Display contents of queue. Number of elements represents count .
Check empty queue condition before displaying an element

3) Write C programs for implementing the following sorting methods to arrange a list of integers in ascending order:

a) Insertion sort
b) Quick sort
c) radix sort