EUROPEAN UNIVERSITY OF LEFKE
Faculty of Engineering
Department of Software Engineering

COMP 217

DATA STRUCTURES

Lab Work No. 6

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Code :

```c
#include <stdio.h>

struct node {
    char info;
    struct node *next;
};

typedef struct node Node;
typedef Node * NodePtr;

typedef struct {
    NodePtr front, rear;
} queue;

NodePtr get_node(char data){
    NodePtr newNode = (NodePtr)malloc(sizeof(Node));
    newNode->info = data;
    newNode->next = NULL;
    return newNode;
}

void free_node(NodePtr p){
    if (!p) return;
    free_node(p->next);
}

void init_queue(queue *q){
    q->front = NULL;
    q->rear  = NULL;
}

void insert(queue *q, char data){
    NodePtr t = get_node(data);
    if (q->rear == NULL) {
        q->front = q->rear = t;
        t -> next = NULL;
    } else {
        q-> rear -> next = t;
```

```c
            t -> next = NULL;
            q->rear = t;
    }
}


char Remove(queue *q){
    if( q->front == NULL){
        printf("Error! Queue is empty!\n");
        exit(1);
    } else {
        NodePtr t = q-> front;
        char x = q->front->info;
        q->front = q->front->next;
        if(q->front == NULL)
        q->rear = NULL;
        free_node(t);
        return x;
    }
}


int main(){
    char buf[100];
    queue q;
    init_queue(&q);
    printf("Enter a string to correct : ");
    fgets(buf, 100, stdin);
    char *marker = buf;
    do{
        if('a' <= *marker && *marker <= 'z') insert(&q, *marker -
('a'-'A'));
        else if('A' <= *marker && *marker <= 'Z') insert(&q,
*marker);
        else if('0' <= *marker && *marker <= '9') continue;
        else if(*marker == '(' || *marker == ')' || *marker == '['
|| *marker == ']' || *marker == '{' || *marker == '}') continue;
        else if(*marker == ' ') insert(&q, ' ');
        else continue;
    } while (*(marker++) != '\n');
    printf("The corrected version is : ");
```
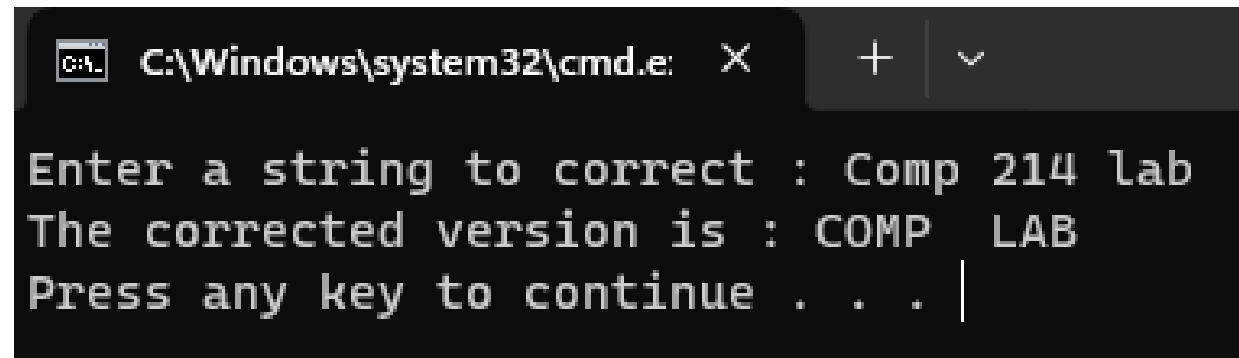
```
    while (q.rear != NULL) printf("%c",Remove(&q));
    return 0;
}
```

Result :

```
C:\Windows\system32\cmd.e:   X    +   v

Enter a string to correct : Comp 214 lab
The corrected version is : COMP  LAB
Press any key to continue . . .
```