1BM19CS079

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11/01/2021

DS-EXTRA-PROGRAMS

PROGRAM-1

Palandrome program

CODE-

```
#include <stdio.h>
#include <stdlib.h>
int count = 0;
struct Node
{
   char item;
   struct Node *link;
};
typedef struct Node *NODE;
NODE getNode()
{
   NODE temp;
   temp = (NODE)malloc(sizeof(struct Node));
```

```
   return temp;
}
void freeNode(NODE x)
{
   free(x);
}
NODE insert_rear(NODE first, char item)
{
   NODE temp, x;
   count += 1;
   temp = getNode();
   temp->item = item;
   temp->link = NULL;
   x = first;
   if (x == NULL)
   {
      return temp;
   }
   while (x->link != NULL)
   {
      x = x->link;
   }
```

```
    x->link = temp;
    return first;
}
NODE deletefront(NODE first)
{
    if (first == NULL)
    {
        printf("list is empty\n");
        return first;
    }
    NODE temp;
    count -= 1;
    temp = first;
    temp = temp->link;
    free(first);
    first = temp;
    return first;
}
void display(NODE first)
{
    NODE temp;
    if (first == NULL)
```

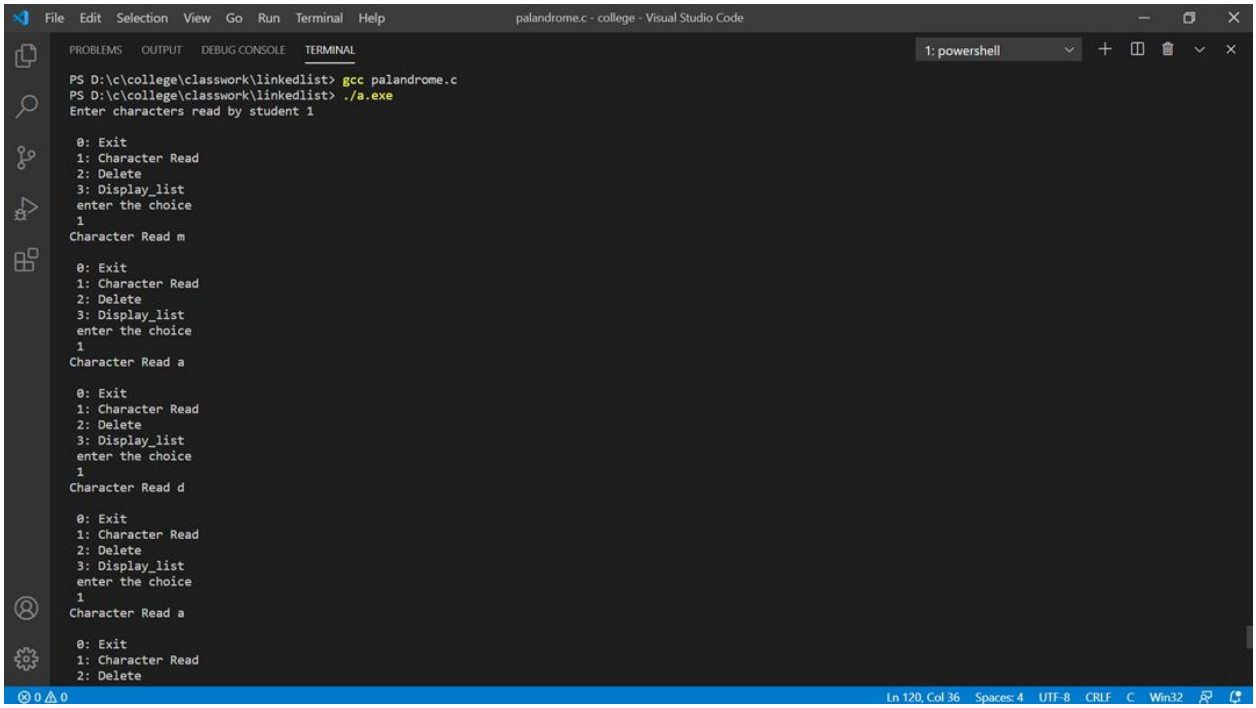
```
      printf("list empty cannot display items\n");
   for (temp = first; temp != NULL; temp = temp->link)
   {
      printf("%c\n", temp->item);
   }
}
void compare(NODE first1,NODE first2){
   NODE temp1=first1,temp2=first2;
   while(temp1!=NULL){
      if(temp1->item!=temp2->item){
         printf("Spelled words will be different \n");
         return;
      }
      temp1=temp1->link;
      temp2=temp2->link;
   }
   printf("Spelled words will be same \n");
   }
void main()
{  char item;
   int a=1, choice = 1, pos;
   NODE first = NULL;
```

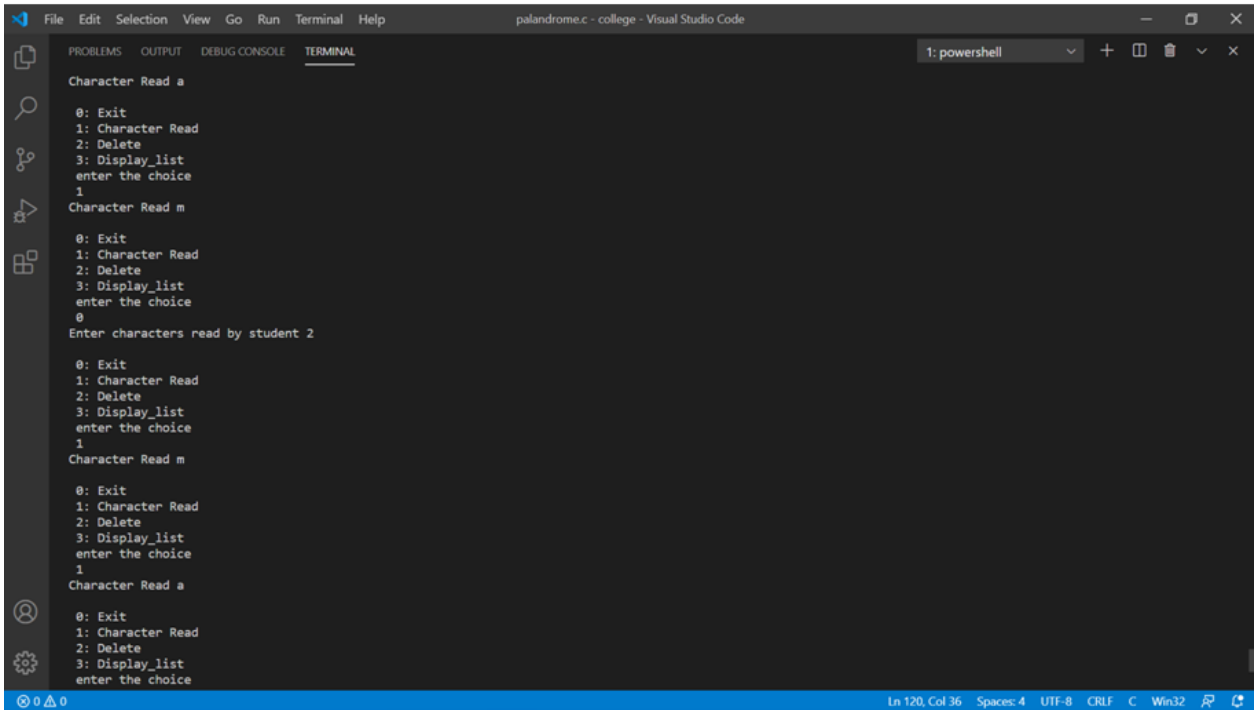
```
NODE first1 = NULL;
NODE first2 = NULL;
printf("Enter characters read by student 1 \n");
while (choice != 0)
{
   printf("\n 0: Exit \n 1: Character Read \n 2: Delete \n 3: Display_list\n");
   printf(" enter the choice\n ");
   scanf("%d", &choice);
   switch (choice)
   {
   case 0:
      break;
   case 1:
      printf("Character Read ");
      scanf("\n%c",&item);
      first1 = insert_rear(first1,item);
      break;
   case 2:
      first1 = deletefront(first1);
      display(first1);
      break;
   case 3:
```

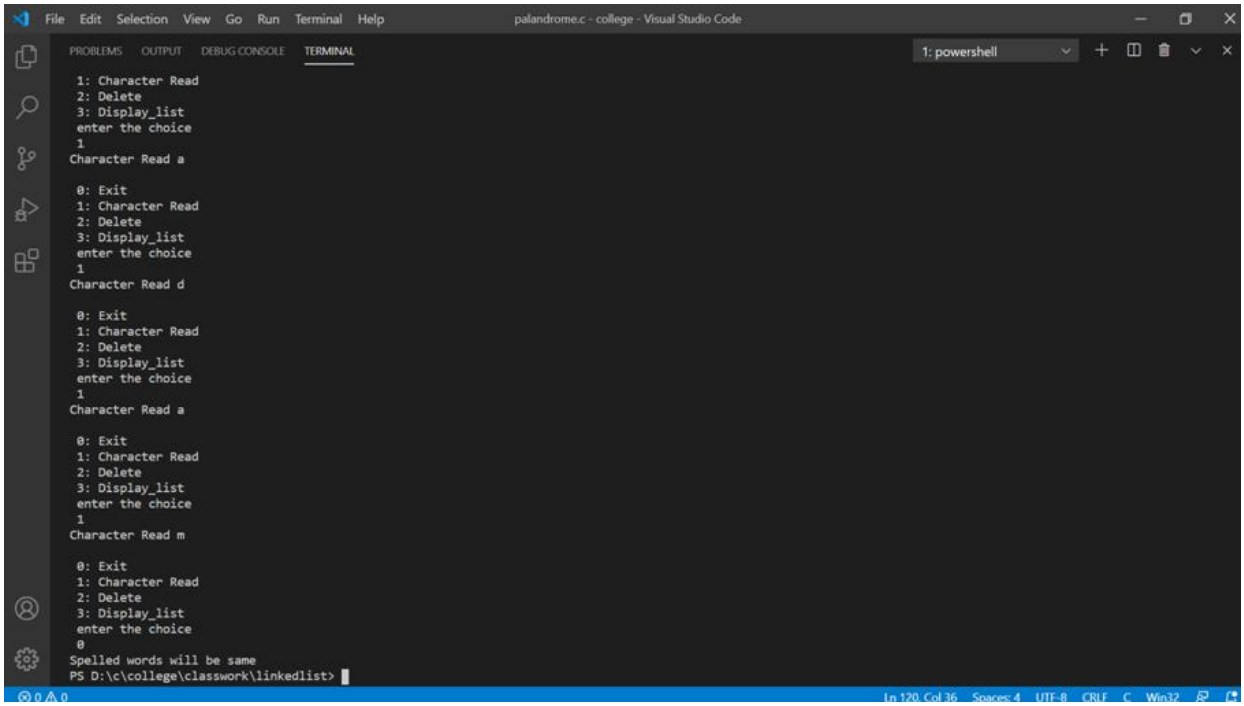
```
        display(first1);
        break;
    default:
        printf("\nInvalid input");
    }
}
printf("Enter characters read by student 2 \n");
choice=1;
while (choice != 0)
{
    printf("\n 0: Exit \n 1: Character Read \n 2: Delete \n 3: Display_list\n");
    printf(" enter the choice\n ");
    scanf("%d", &choice);
    switch (choice)
    {
    case 0:
        break;
    case 1:
        printf("Character Read ");
        scanf("\n%c",&item);
        first2 = insert_rear(first2,item);
        break;
```

```
        case 2:
            first2 = deletefront(first2);
            display(first2);
            break;
        case 3:
            display(first2);
            break;
        default:
            printf("\nInvalid input");
        }
    }
    compare(first1,first2);
}
```

OUTPUT-


File Edit Selection View Go Run Terminal Help
palandrome.c - college - Visual Studio Code
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: powershell
PS D:\c\college\classwork\linkedlist> gcc palandrome.c
PS D:\c\college\classwork\linkedlist> ./a.exe
Enter characters read by student 1
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
1
Character Read m
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
1
Character Read a
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
1
Character Read d
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
1
Character Read a
0: Exit
1: Character Read
2: Delete
Ln 120, Col 36 Spaces: 4 UTF-8 CRLF C Win32


File Edit Selection View Go Run Terminal Help
palandrome.c - college - Visual Studio Code
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: powershell
Character Read a
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
1
Character Read m
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
0
Enter characters read by student 2
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
1
Character Read m
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
1
Character Read a
0: Exit
1: Character Read
2: Delete
3: Display_list
enter the choice
Ln 120, Col 36 Spaces: 4 UTF-8 CRLF C Win32



PROGRAM-2

Candidates program

CODE-

```
#include <stdio.h>

#include <stdlib.h>

#include<string.h>

int can_count=0;

struct node

{
```

```
    char name[20];
    struct node *next;
    struct node *prev;
};
typedef struct node *NODE;
NODE getNode()
{
    NODE temp;
    temp = (NODE)malloc(sizeof(struct node));
    return temp;
}
void freeNode(NODE x)
{
    free(x);
}
NODE insertFront(NODE first, char it[])
{
```

```
    NODE temp = getNode();
    strcpy(temp->name,it);
    temp->prev = NULL;
    temp->next = NULL;
    if (first == NULL)
    {
        return temp;
    }
    temp->next = first;
    can_count++;
    return temp;
}
NODE del_rear(NODE first)
{
    if (first==NULL){
        printf("None regiatered\n");
        return first;
```

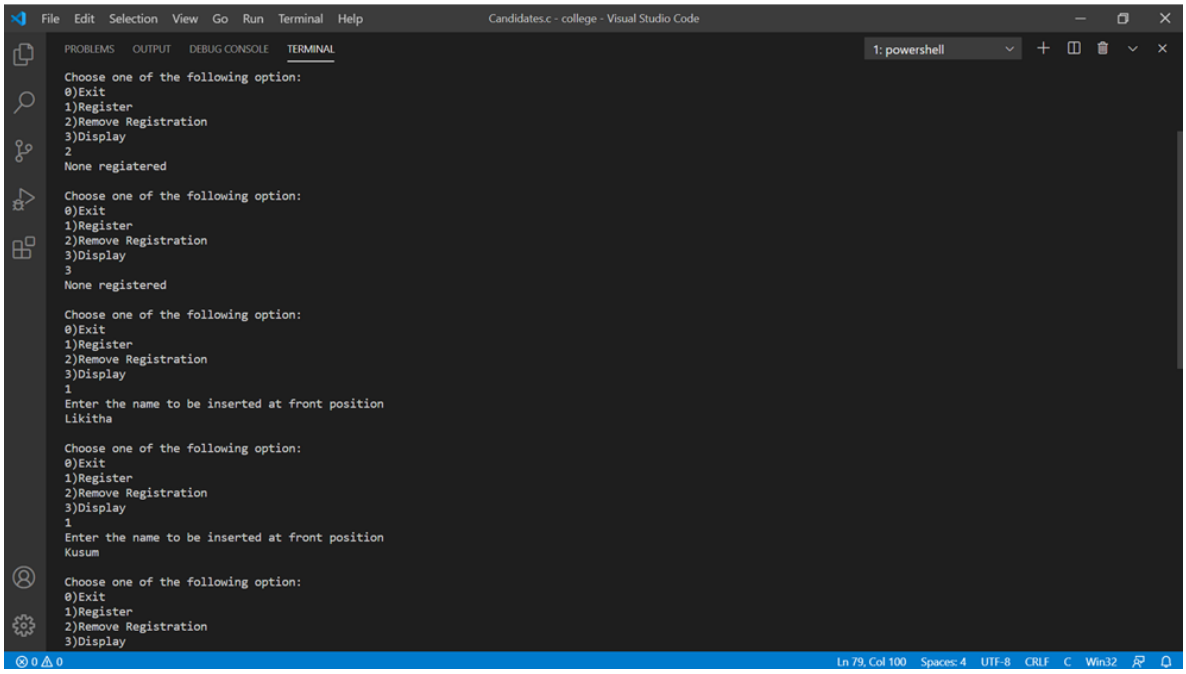
```
}
if (first->next==NULL){
   printf("Deleted name is %s \n",first->name);
   freeNode(first);
   return NULL;
}
NODE temp,temp1;
temp=first;
while(temp->next->next!=NULL){
   temp=temp->next;
}
char na[20];
temp1=temp->next;
temp->next=NULL;
strcpy(na,temp1->name);
printf("Deleted name is %s \n",na);
free(temp1);
```

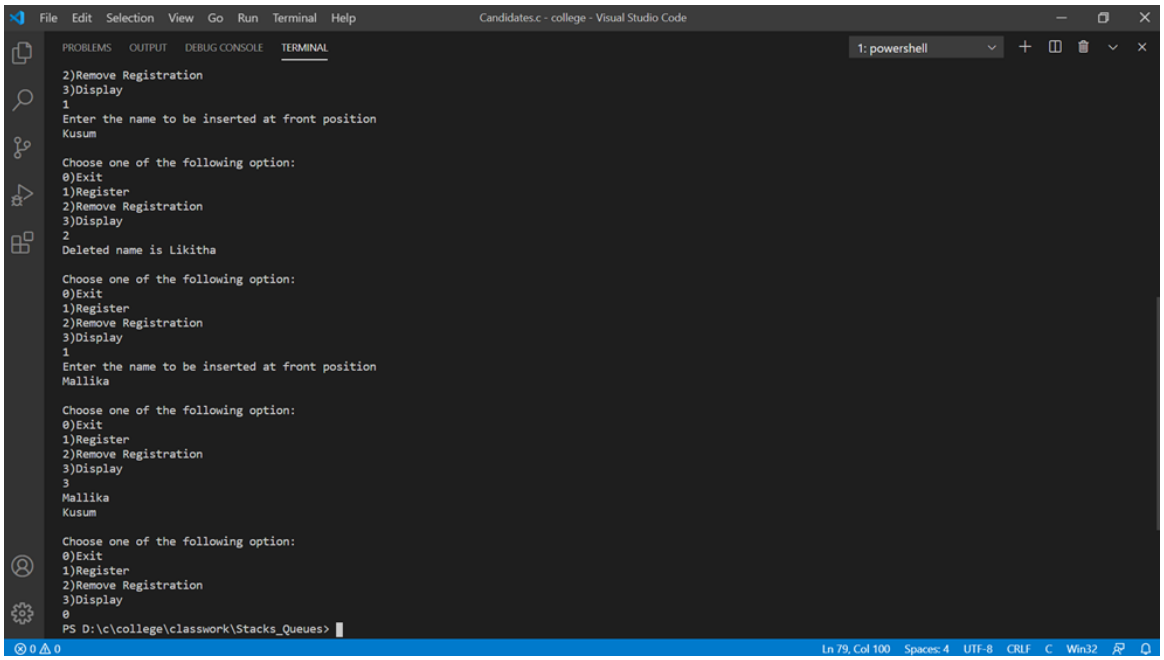
```
    can_count--;
    return first;
}
void display(NODE first)
{
    if (first==NULL)
        printf("None registered\n");
    NODE cur = first;
    while (cur != NULL)
    {
        printf("%s\n",cur->name);
        cur = cur->next;
    }
}
void main()
{
    NODE first = NULL;
```

```
   int ch, pos;
   char name[20],a;
   while (ch != 0)
   {
      printf("\nChoose one of the following option:
\n0)Exit \n1)Register \n2)Remove Registration
\n3)Display\n");
      scanf("%d", &ch);
      switch (ch)
      {
      case 0:
         exit(0);
         break;
      case 1:
         if(can_count<250){
         printf("Enter the name to be inserted at front
position\n");
         scanf("%s",name);
```

```
            first = insertFront(first, name);
            }
            else
                printf("Registration Closed\n");
            break;
        case 2:
            first = del_rear(first);
            break;
        case 3:
            display(first);
            break;
        default:
            printf("Invalid input \n");
            break;
        }
    }
}
```

OUTPUT-





PROGRAM-3

```
#include<stdio.h>
#include<stdlib.h>
#include<process.h>
#define que_size 5
int front=0,rear=-1,q[que_size],count=0;
void insertrear(int item)
{
	if(count==que_size)
	{
		printf("queue overflow");
		return;
	}
	rear=(rear+1)%que_size;
	q[rear]=item;
	count++;
}
int deletefront()
```

```
{       int item;
        if(count==0) return -1;
        item = q[front];
        front=(front+1)%que_size;
        count=count-1;
        return item;
}
void displayq()
{
        int i,f;
        if(count==0)
        {
                printf("\nqueue is empty");
                return;
        }
        f=front;
        int c=count;
```

```
        printf("\nProgram in the queue \n");
        while(c!=0){
                printf("\nExecution time : %d",q[f]);
                f=((f+1)%que_size);
                c--;
        }
}
void execution(){
        if(count==0)
        {
                printf("\nqueue is empty");
                return;
        }
    int a,flag=0;
    while(flag<5){
    a=deletefront();
    if(a!=0){
```

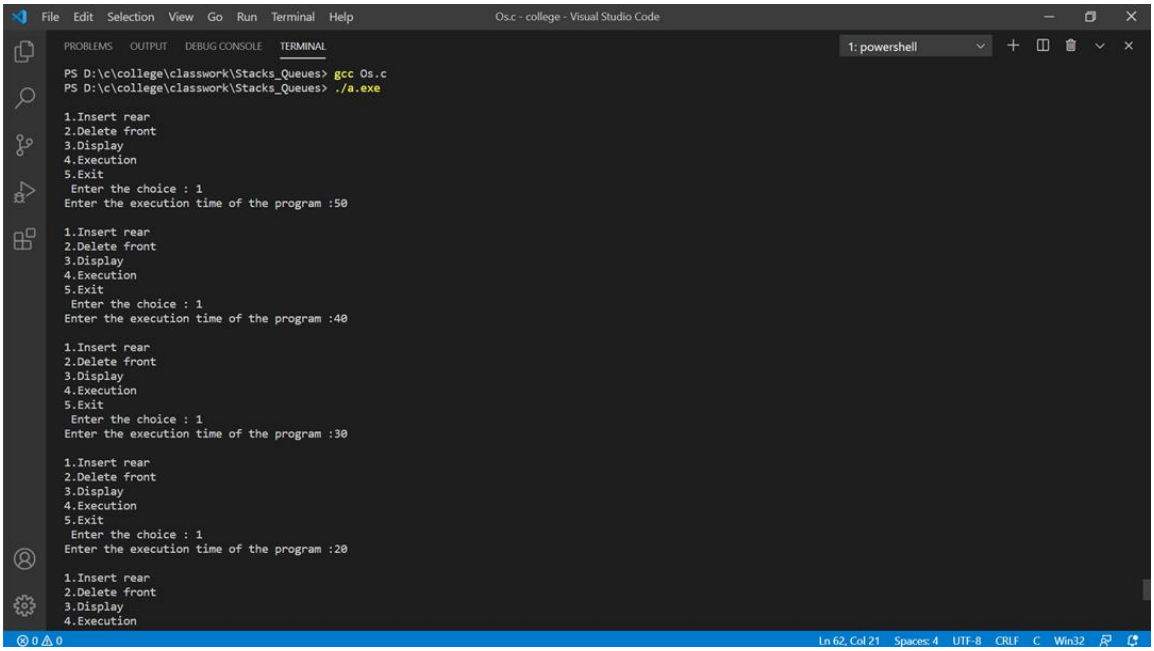
```
        a-=10;
        flag=0;
    }
    insertrear(a);
    if(a==0){
        flag++;
    }
    }
    printf("\nExecution completed");
    displayq();
    front=0,rear=-1;
}
void main()
{
        int choice,item;
        for(;;)
        {
```

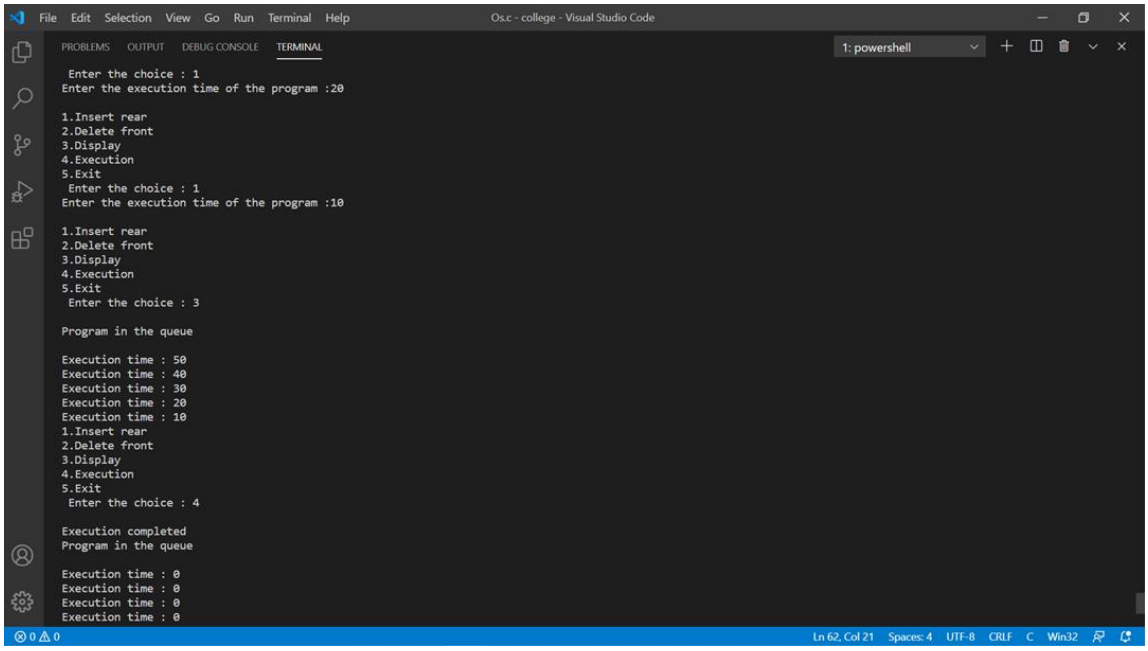
```
        printf("\n1.Insert rear \n2.Delete front
\n3.Display \n4.Execution \n5.Exit \n ");
        printf("Enter the choice : ");
        scanf("%d",&choice);
        switch(choice)
        {
            case 1:printf("Enter the execution time of
the program :");
                scanf("%d",&item);
                insertrear(item);
                break;
            case 2:item=deletefront();
                if(item==-1)
                printf("queue is empty\n");
                else
                printf("item deleted is %d \n",item);
                break;
```

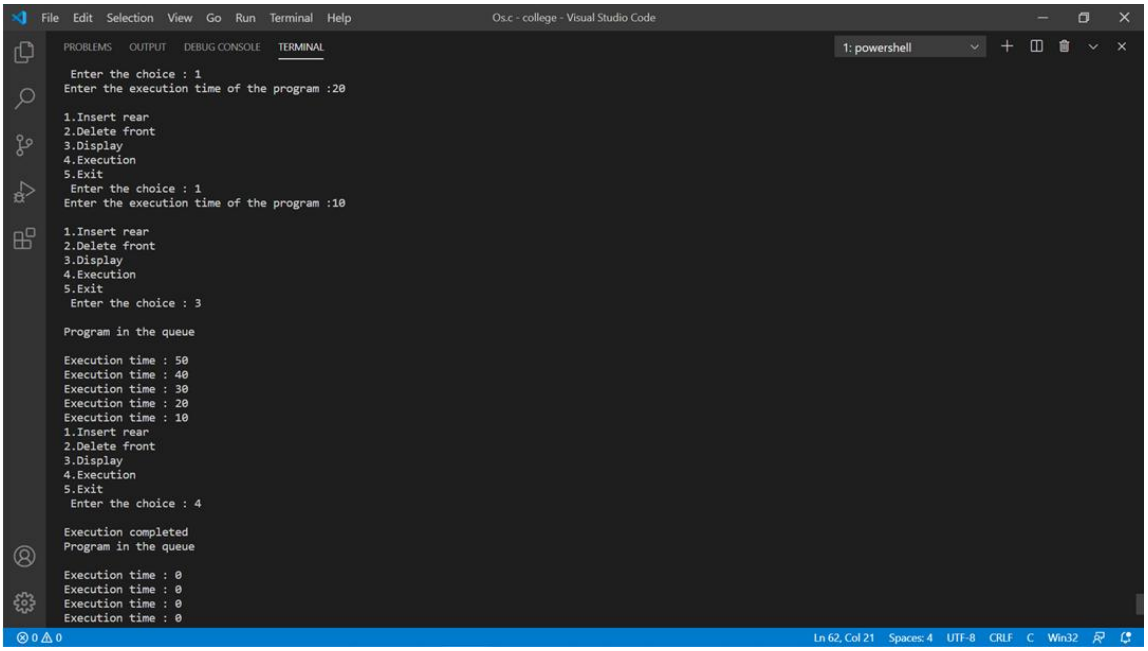
```
                case 3:displayq();
                                break;
                   case 4:execution();
          break;
                default:exit(0);
              }
       }

}
```

OUTPUT-


File Edit Selection View Go Run Terminal Help
Os.c - college - Visual Studio Code
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: powershell
PS D:\c\college\classwork\Stacks_Queues> gcc Os.c
PS D:\c\college\classwork\Stacks_Queues> ./a.exe
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 1
Enter the execution time of the program :50
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 1
Enter the execution time of the program :40
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 1
Enter the execution time of the program :30
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 1
Enter the execution time of the program :20
1.Insert rear
2.Delete front
3.Display
4.Execution
Ln 62, Col 21 Spaces: 4 UTF-8 CRLF C Win32


File Edit Selection View Go Run Terminal Help
Os.c - college - Visual Studio Code
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: powershell
Enter the choice : 1
Enter the execution time of the program :20
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 1
Enter the execution time of the program :10
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 3
Program in the queue
Execution time : 50
Execution time : 40
Execution time : 30
Execution time : 20
Execution time : 10
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 4
Execution completed
Program in the queue
Execution time : 0
Execution time : 0
Execution time : 0
Execution time : 0
Ln 62, Col 21 Spaces: 4 UTF-8 CRLF C Win32


File Edit Selection View Go Run Terminal Help
Os.c - college - Visual Studio Code
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: powershell
Enter the choice : 1
Enter the execution time of the program :20
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 1
Enter the execution time of the program :10
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 3
Program in the queue
Execution time : 50
Execution time : 40
Execution time : 30
Execution time : 20
Execution time : 10
1.Insert rear
2.Delete front
3.Display
4.Execution
5.Exit
Enter the choice : 4
Execution completed
Program in the queue
Execution time : 0
Execution time : 0
Execution time : 0
Execution time : 0
0 0
Ln 62, Col 21 Spaces: 4 UTF-8 CRLF C Win32