SIDDHI SINGH

17BIT0028

ITE-1004

EXERCISE – 5

There is a garage where the access road can accommodate any number of trucks at one time. The garage is built in such a way that only the last truck entered can be moved out. Each of the trucks is identified by a positive integer (a truck_id). Implement dynamically to handle truck moves, allowing for the following commands:
i) On_road (truck_id); ii) Enter_garage (truck_ id); iii) Exit_garage (truck_id); iv) Show_trucks (garage or road);
If an attempt is made to get a truck out which is not the closest to the garage entry, the error message "Truck x cannot be moved" should be displayed.

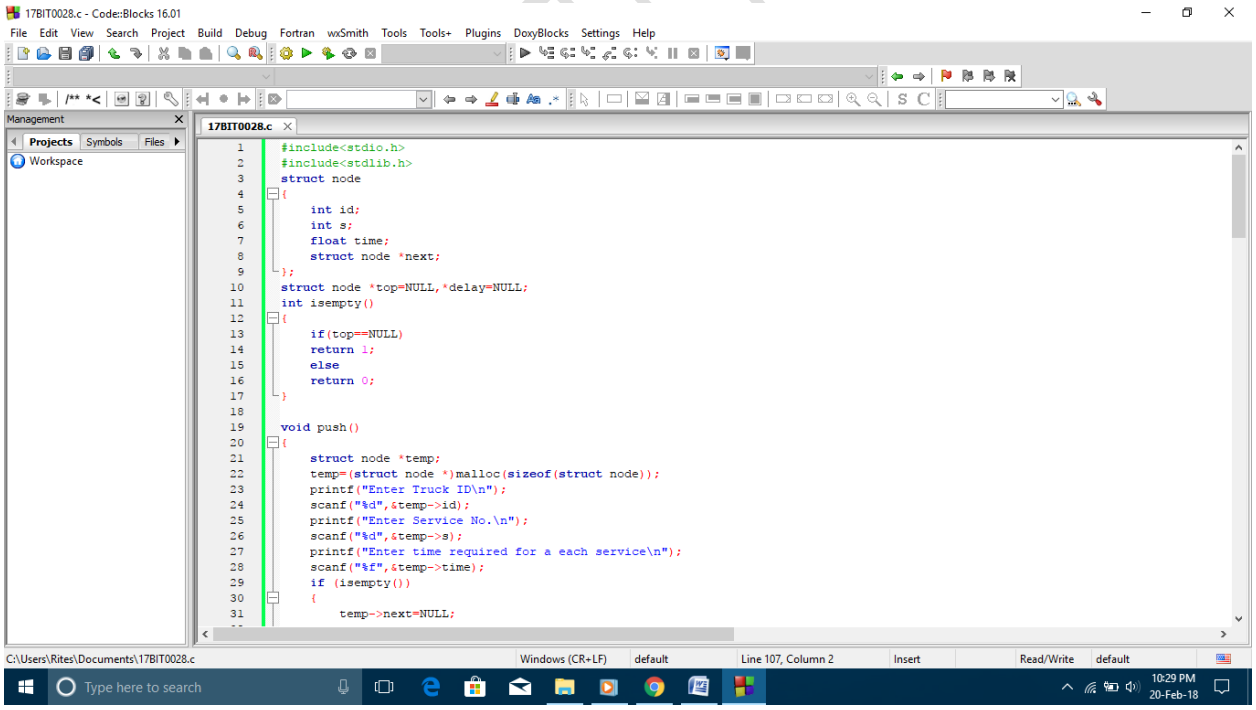
```
#include<stdio.h>
#include<stdlib.h>
struct node
{
    int id;
    int s;
    float time;
    struct node *next;
};
struct node *top=NULL,*delay=NULL;
int isempty()
{
    if(top==NULL)
    return 1;
    else
    return 0;
}

void push()
{
    struct node *temp;
    temp=(struct node *)malloc(sizeof(struct node));
    printf("Enter Truck ID\n");
    scanf("%d",&temp->id);
    printf("Enter Service No.\n");
```

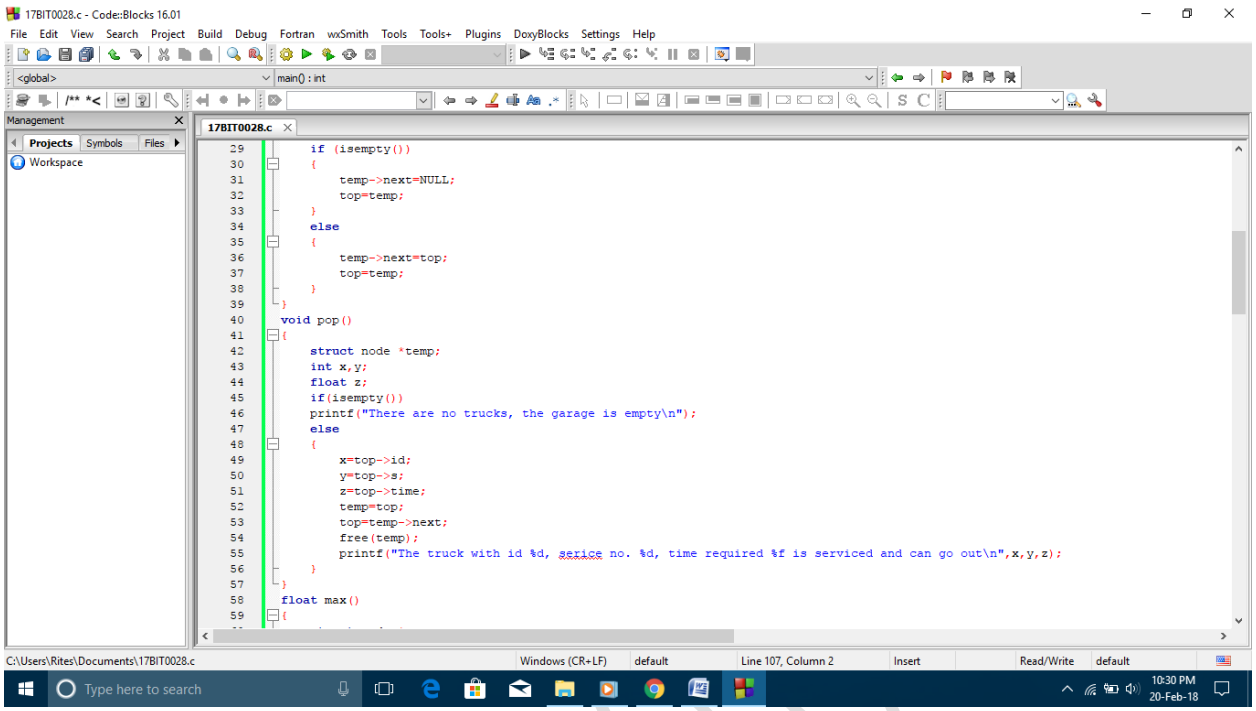
```
    scanf("%d",&temp->s);
    printf("Enter time required for a each service\n");
    scanf("%f",&temp->time);
    if (isempty())
    {
        temp->next=NULL;
        top=temp;
    }
    else
    {
        temp->next=top;
        top=temp;
    }
}
void pop()
{
    struct node *temp;
    int x,y;
    float z;
    if(isempty())
    printf("There are no trucks, the garage is empty\n");
    else
    {
        x=top->id;
        y=top->s;
        z=top->time;
        temp=top;
        top=temp->next;
        free(temp);
        printf("The truck with id %d, serice no. %d, time
required %f is serviced and can go out\n",x,y,z);
    }
}
float max()
{
    struct node *temp;
    float max=top->time;
    temp=top;
    while(temp->next!=NULL)
    {
        if(temp->time>=max)
        max=temp->time;
        temp=temp->next;
    }
    if(temp->time>max)
    max=temp->time;
    return(max);
```

```
}
void display()
{
    struct node *temp=top;
    if(isempty())
    printf("garage is empty\n");
    else
    {
    while(temp->next!=NULL)
    {

        printf("There is a truck with id %d, service no. %d,
time required %f in the garage\n\n",temp->id,temp->s,temp-
>time);
    temp=temp->next;
}
    printf("There is a truck with id %d, service no. %d, time
required %f in the garage\n\n",temp->id,temp->s,temp->time);
}
}

void display1()
{
    struct node *temp=delay;
    if(delay==NULL)
    printf("there is no truck whose service is postponed");
    else
    {

    while(temp->next!=NULL)
    {
        printf("There is a truck with id %d, service no. %d,
time required %f in the garage\n\n",temp->id,temp->s,temp-
>time);
    temp=temp->next;
    }
    printf("There is a truck with id %d, service no. %d, time
required %f in the garage\n\n",temp->id,temp->s,temp->time);
}
}
int main()
{
struct node *temp1;
int ch;
float m;
while(ch!=6)
{
```

```
    printf("1-Toallow the entry of trucks one by one(push)\n");
    printf("2-Exit of trucks near the entry gate with all
conditions applied(pop)\n");
    printf("3-Display the details of the trucks in the
garage(left to be serviced)\n");
    printf("4-display the details of the trucks whose service
has been postponed\n");
    printf("5-display the details of the truck near the entry
gate\n");
    printf("6-exit\n");
    scanf("%d",&ch);
    switch(ch)
    {
        case 1:
            push();
            break;
        case 2:
            printf("only the truck near the gate is
serviced\n");
            m=max();
            if(top->time!=m)
            {
                if(top->s<=3)
                printf("Service is FREE, no charge required\n");
                else if(top->s>3)
                printf("Service is CHARGABLE.\nCharge depends on
the type of servicing\n");
                pop();

            }
            else if(top->time==m)
            {
            printf("This truck requires the maximum time for
service so its service is postponed to the last\n");
            temp1=top;
            top=top->next;
            if(delay==NULL)
            {
            delay=temp1;
            delay->next=NULL;
            }
            else
            {
            temp1->next=delay;
            delay=temp1;
            }
            }
```

```
            break;
        case 3:
            display();
            break;
        case 4:
            display1();
            break;
        case 5:
            printf("The details of the truck which entered the
garage at last are:\n");
            printf("ID:%d\nSERVICE NO.:%d\nTIME REQD.:%f\n",top-
>id,top->s,top->time);
            break;
        case 6:
            break;

    }
}
}
```




17BIT0028.c - Code::Blocks 16.01
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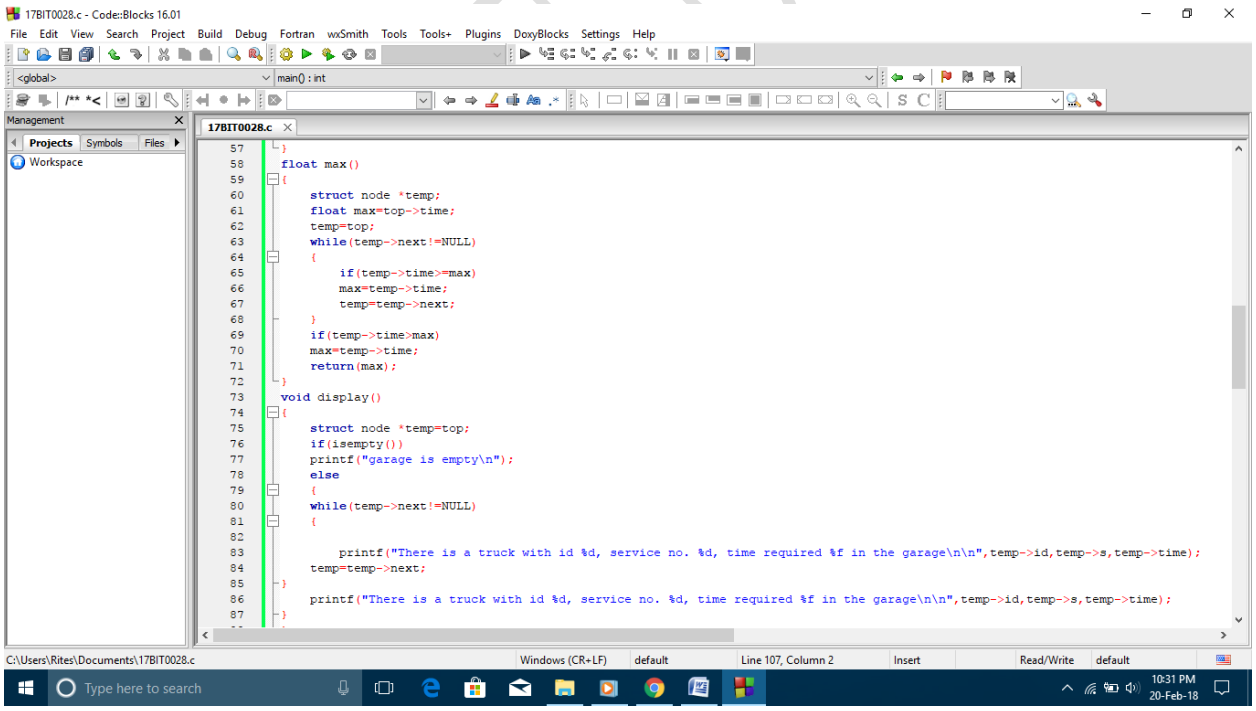
<global>
main() : int
Management
Projects Symbols Files
Workspace
17BIT0028.c
29 if (isempty())
30 {
31 temp->next=NULL;
32 top=temp;
33 }
34 else
35 {
36 temp->next=top;
37 top=temp;
38 }
39 }
40 void pop()
41 {
42 struct node *temp;
43 int x,y;
44 float z;
45 if(isempty())
46 printf("There are no trucks, the garage is empty\n");
47 else
48 {
49 x=top->id;
50 y=top->s;
51 z=top->time;
52 temp=top;
53 top=temp->next;
54 free(temp);
55 printf("The truck with id %d, serice no. %d, time required %f is serviced and can go out\n",x,y,z);
56 }
57 }
58 float max()
59 {
C:\Users\Rites\Documents\17BIT0028.c
Windows (CR+LF)
default
Line 107, Column 2
Insert
Read/Write
default
Type here to search
10:30 PM
20-Feb-18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<global>
main() : int
Management
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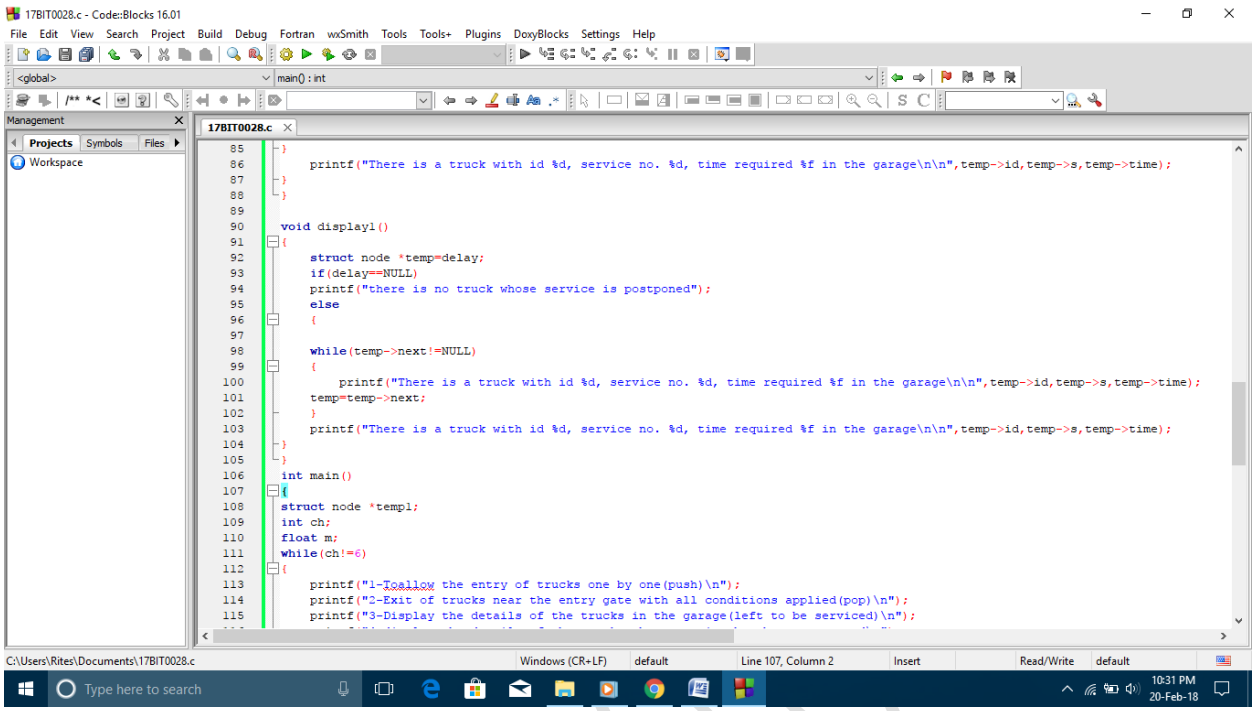
57 }
58 float max()
59 {
60 struct node *temp;
61 float max=top->time;
62 temp=top;
63 while(temp->next!=NULL)
64 {
65 if(temp->time>=max)
66 max=temp->time;
67 temp=temp->next;
68 }
69 if(temp->time>max)
70 max=temp->time;
71 return(max);
72 }
73 void display()
74 {
75 struct node *temp=top;
76 if(isempty())
77 printf("garage is empty\n");
78 else
79 {
80 while(temp->next!=NULL)
81 {
82
83 printf("There is a truck with id %d, service no. %d, time required %f in the garage\n\n",temp->id,temp->s,temp->time);
84 temp=temp->next;
85 }
86 printf("There is a truck with id %d, service no. %d, time required %f in the garage\n\n",temp->id,temp->s,temp->time);
87 }
C:\Users\Rites\Documents\17BIT0028.c
Windows (CR+LF)
default
Line 107, Column 2
Insert
Read/Write
default
Type here to search
10:31 PM
20-Feb-18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}
printf("There is a truck with id %d, service no. %d, time required %f in the garage\n\n",temp->id,temp->s,temp->time);
}
}
void display1()
{
struct node *temp=delay;
if(delay==NULL)
printf("there is no truck whose service is postponed");
else
{
while(temp->next!=NULL)
{
printf("There is a truck with id %d, service no. %d, time required %f in the garage\n\n",temp->id,temp->s,temp->time);
temp=temp->next;
}
printf("There is a truck with id %d, service no. %d, time required %f in the garage\n\n",temp->id,temp->s,temp->time);
}
}
int main()
{
struct node *temp1;
int ch;
float m;
while(ch!=6)
{
printf("1-Toallow the entry of trucks one by one(push)\n");
printf("2-Exit of trucks near the entry gate with all conditions applied(pop)\n");
printf("3-Display the details of the trucks in the garage(left to be serviced)\n");
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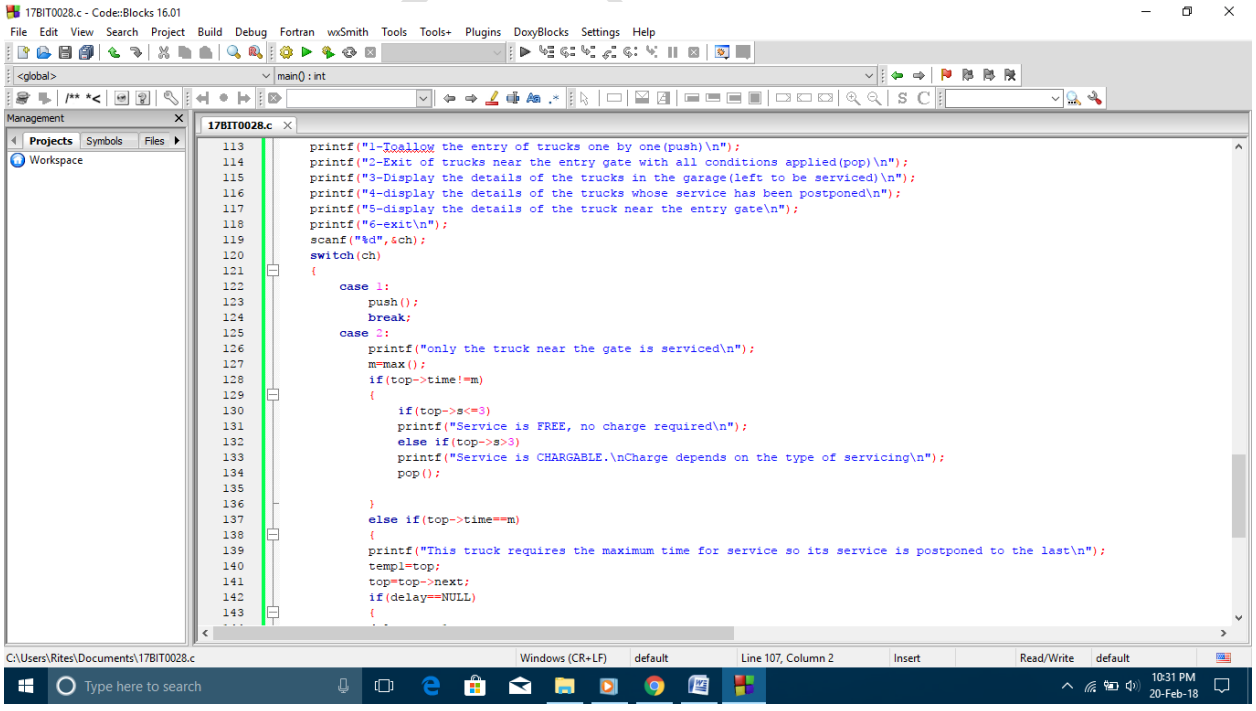
20-Feb-18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printf("3-Display the details of the trucks in the garage(left to be serviced)\n");
printf("4-display the details of the trucks whose service has been postponed\n");
printf("5-display the details of the truck near the entry gate\n");
printf("6-exit\n");
scanf("%d",&ch);
switch(ch)
{
case 1:
push();
break;
case 2:
printf("only the truck near the gate is serviced\n");
m=max();
if(top->time!=m)
{
if(top->s<=3)
printf("Service is FREE, no charge required\n");
else if(top->s>3)
printf("Service is CHARGABLE.\nCharge depends on the type of servicing\n");
pop();
}
else if(top->time==m)
{
printf("This truck requires the maximum time for service so its service is postponed to the last\n");
temp1=top;
top=top->next;
if(delay==NULL)
{
C:\Users\Rites\Documents\17BIT0028.c
Windows (CR+LF)
default
Line 107, Column 2
Insert
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default
Type here to search
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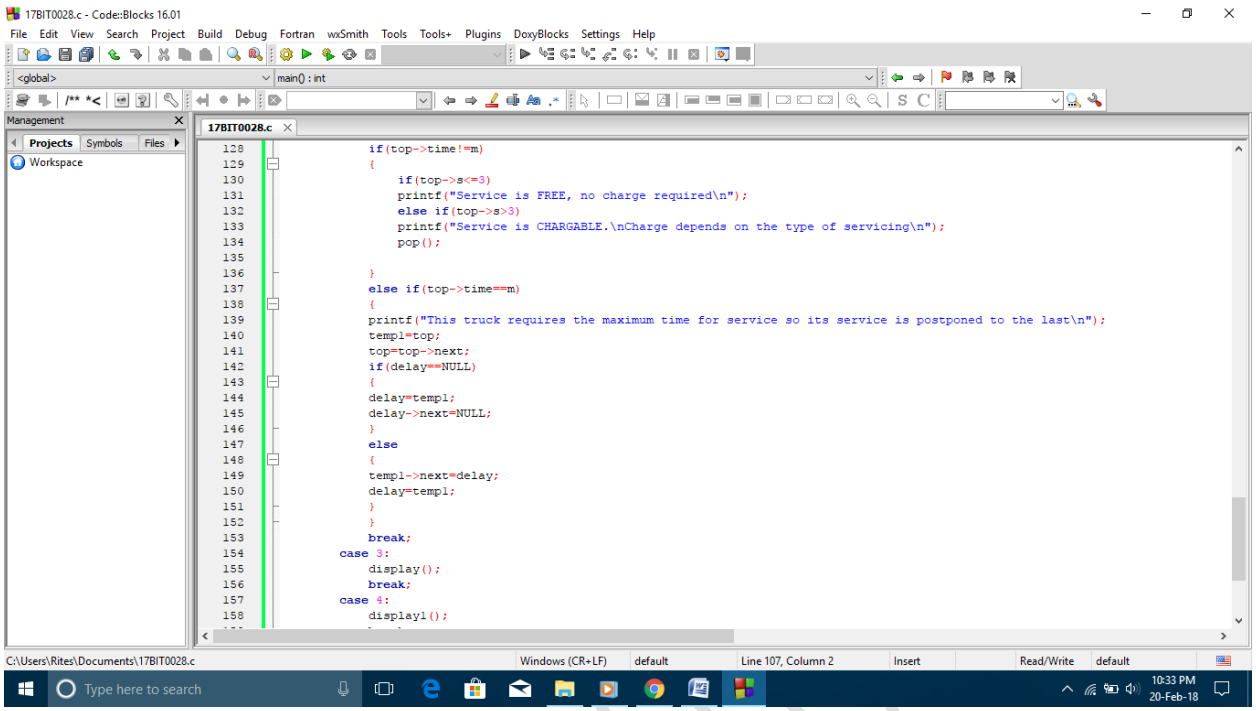
20-Feb-18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{
if(top->s<=3)
printf("Service is FREE, no charge required\n");
else if(top->s>3)
printf("Service is CHARGABLE.\nCharge depends on the type of servicing\n");
pop();
}
else if(top->time==m)
{
printf("This truck requires the maximum time for service so its service is postponed to the last\n");
temp1=top;
top=top->next;
if(delay==NULL)
{
delay=temp1;
delay->next=NULL;
}
else
{
temp1->next=delay;
delay=temp1;
}
}
break;
case 3:
display();
break;
case 4:
display1();
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default
Type here to search
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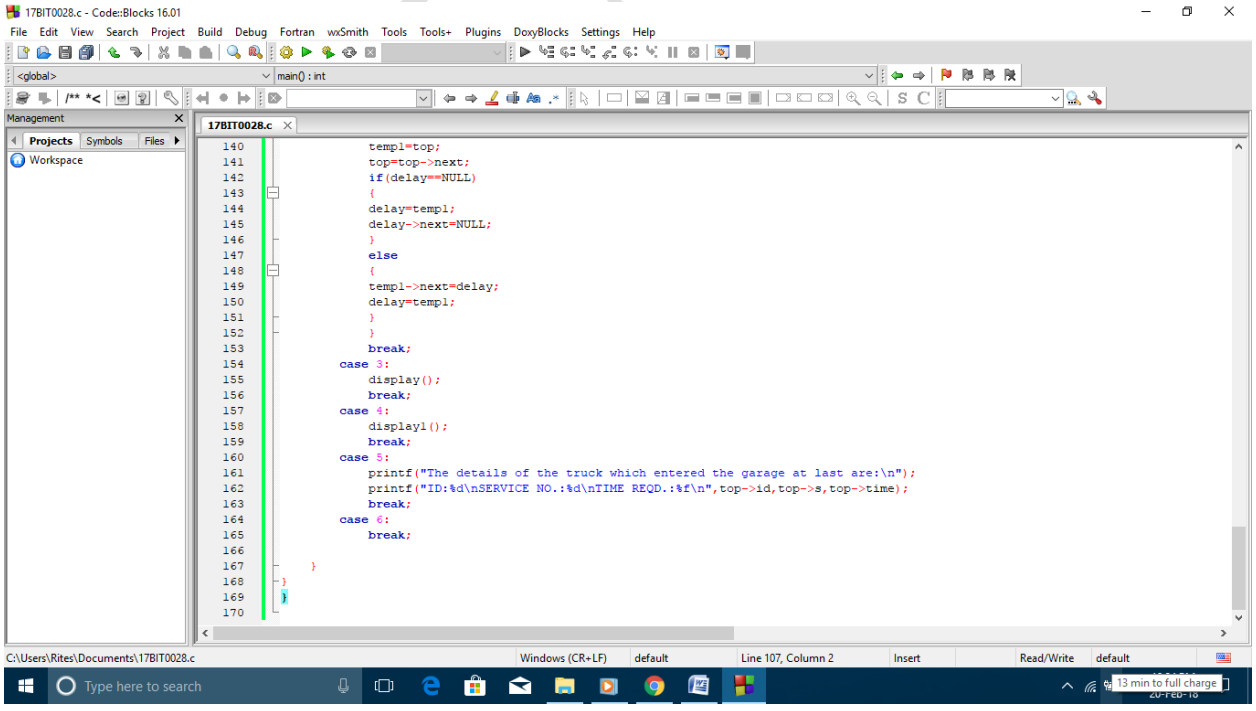
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<global>
main() : int
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17BIT0028.c
temp1=top;
top=top->next;
if(delay==NULL)
{
delay=temp1;
delay->next=NULL;
}
else
{
temp1->next=delay;
delay=temp1;
}
}
break;
case 3:
display();
break;
case 4:
display1();
break;
case 5:
printf("The details of the truck which entered the garage at last are:\n");
printf("ID:%d\nSERVICE NO.:%d\nTIME REQD.:%f\n",top->id,top->s,top->time);
break;
case 6:
break;
}
}
}
C:\Users\Rites\Documents\17BIT0028.c
Windows (CR+LF)
default
Line 107, Column 2
Insert
Read/Write
default
Type here to search
13 min to full charge

OUTPUT :

```
1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
6-exit
1
Enter Truck ID
0028
Enter Service No.
0029
Enter time required for a each service
30
1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
6-exit
1
Enter Truck ID
0001
Enter Service No.
0002
Enter time required for a each service
25
1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
```

```
1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
6-exit
1
Enter Truck ID
0009
Enter Service No.
0010
Enter time required for a each service
35
1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
6-exit
2
only the truck near the gate is serviced
This truck requires the maximum time for service so its service is postponed to the last
1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
6-exit
3
There is a truck with id 1, service no. 2, time required 25.000000 in the garage
```

```
1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
6-exit
3
There is a truck with id 1, service no. 2, time required 25.000000 in the garage

There is a truck with id 28, service no. 29, time required 30.000000 in the garage

1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
6-exit
4
There is a truck with id 9, service no. 10, time required 35.000000 in the garage

1-To allow the entry of trucks one by one(push)
2-Exit of trucks near the entry gate with all conditions applied(pop)
3-Display the details of the trucks in the garage(left to be serviced)
4-display the details of the trucks whose service has been postponed
5-display the details of the truck near the entry gate
6-exit
5
The details of the truck which entered the garage at last are:
ID:1
SERVICE NO.:2
TIME REQD.:25.000000
```