

1. Write a C/C++ program Using stack, to check whether the given parenthesized expression is balanced or not.

The image shows a screenshot of an online C compiler interface. The browser tabs include 'Online C Compiler - online', 'VL2019205000932\_AST02', 'CSE1003\_DIGITAL-LOGIC-A...', 'ITE1004 Lab: Data Structu...', and another 'Online C Compiler - online'. The address bar shows 'onlinegdb.com/online\_c\_compiler'. The code editor displays a C program for checking balanced parentheses. The code includes standard headers, defines a stack size, and implements a stack-based algorithm. The program prompts the user to input characters and checks if the expression is valid or invalid based on the stack operations. The Windows taskbar at the bottom shows the search bar and various application icons, with the system clock indicating 10:09 PM on 1/11/2020.

```
main.c
1 #include<stdio.h>
2 #include<stdlib.h>
3 #include<string.h>
4 #define max 500
5 char ch[max];char stk[max];
6 int top=-1;
7 void input()
8 {
9     int flag=0;
10    printf("input characters");
11    scanf("%s",&ch);
12    int l =strlen(ch);
13    int i;
14    for(i=0;i<l;i++)
15    {
16        if(ch[i]=='('||ch[i]=='{'||ch[i]=='[')
17        {
18            top++;
19            stk[top]=ch[i];
20        }
21        else if(ch[i]==')'&&stk[top]=='(')
22            top--;
23        else if(ch[i]=='}'&&stk[top]=='{')
24            top--;
25        else if(ch[i]==']'&&stk[top]=='[')
26            top--;
27        else
28        {
29            printf("invalid");flag = 1;break;
30        }
31    }
32    if(flag==0)
33        printf("valid");
34 }
35 int main()
36 {
37     input();
38     return 0;
39 }
```

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input

```
main.c:11:13: warning: format '%s' expects argument of type 'char *', but argument 2 has type 'char (*)[500]' [-Wformat=]
input characters({{}})
valid

...Program finished with exit code 0
Press ENTER to exit console.
```

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input

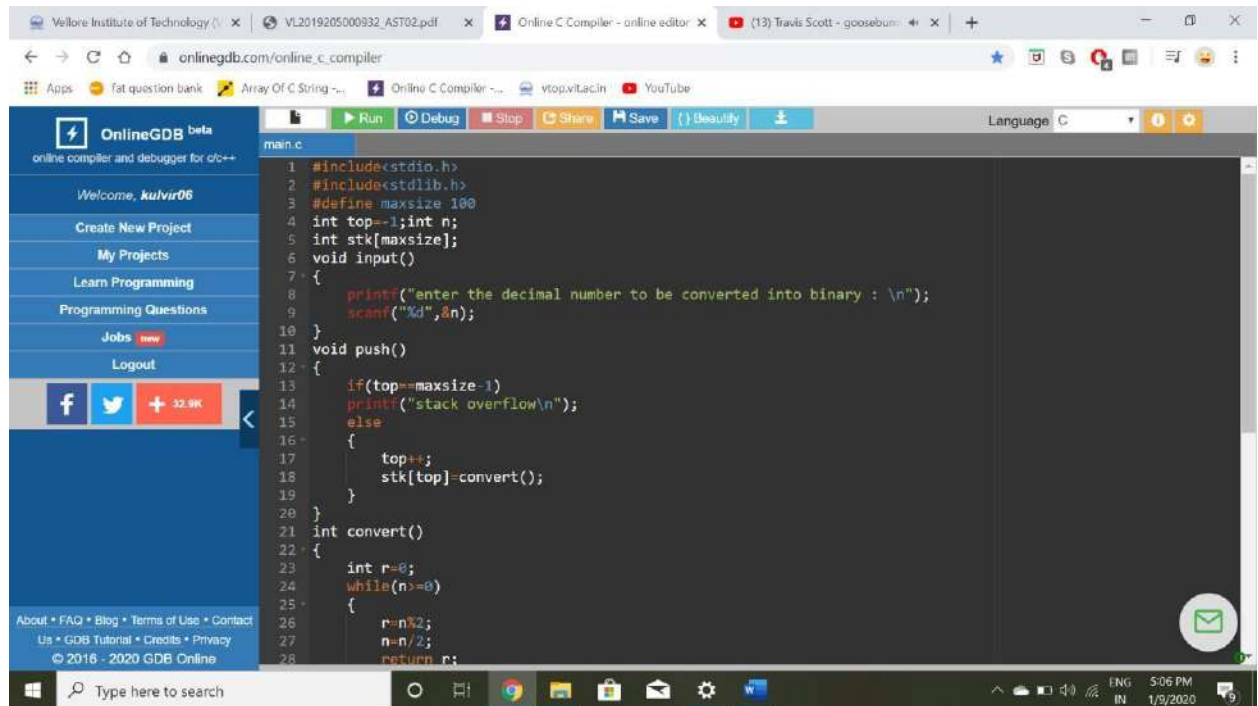
```
main.c:11:13: warning: format '%s' expects argument of type 'char *', but argument 2 has type 'char (*)[500]' [-Wformat=]
input characters}}{{}}
invalid

...Program finished with exit code 0
Press ENTER to exit console.
```

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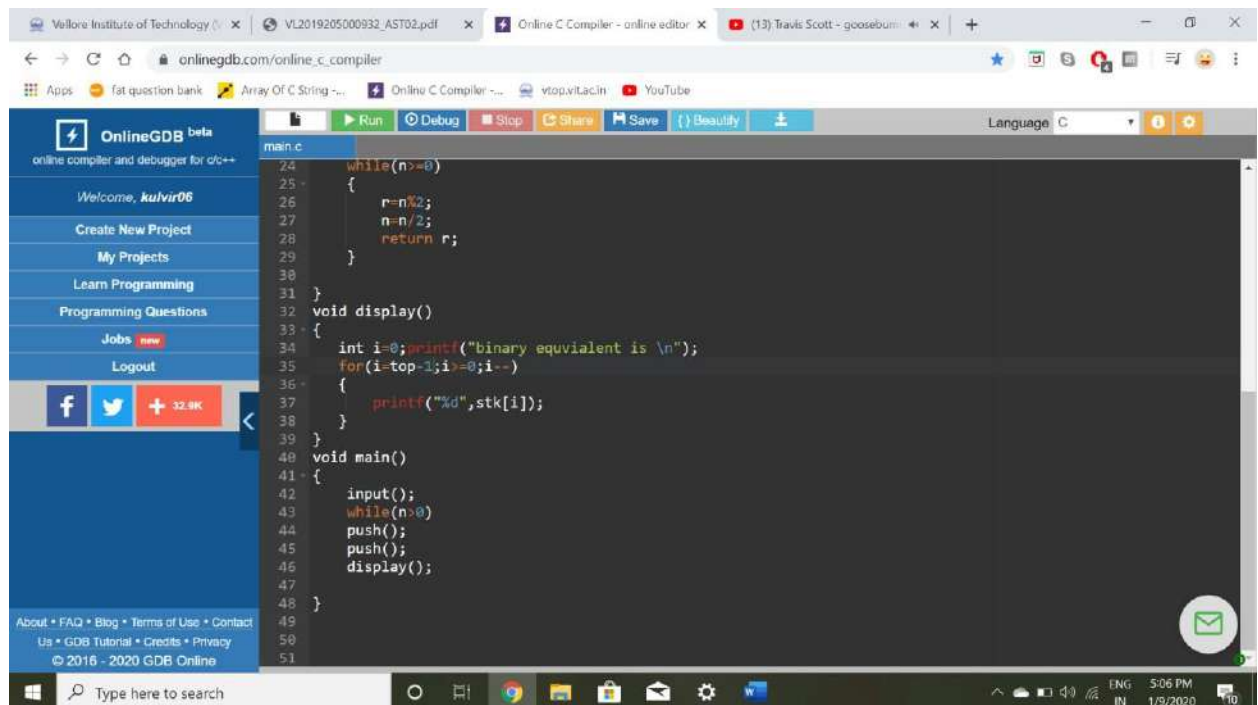
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2. Convert the given decimal number to the corresponding binary number. Use the stack data structure to perform the conversion.



The screenshot shows the OnlineGDB website interface. On the left is a sidebar with navigation links like 'Welcome, kulvir06', 'Create New Project', 'My Projects', 'Learn Programming', 'Programming Questions', 'Jobs', and 'Logout'. The main area displays a C program for converting a decimal number to binary using a stack. The code includes headers for `stdio.h` and `stdlib.h`, defines a `maxsize` of 100, and declares variables `top`, `n`, and `stk`. It defines functions `input()`, `push()`, and `convert()`. The `push()` function checks for stack overflow and pushes the remainder of `n` divided by 2. The `convert()` function uses a `while` loop to repeatedly divide `n` by 2 and return the remainder. The `main` function calls `input()`, `push()`, and `convert()`.

```
1 #include<stdio.h>
2 #include<stdlib.h>
3 #define maxsize 100
4 int top=-1;int n;
5 int stk[maxsize];
6 void input()
7 {
8     printf("enter the decimal number to be converted into binary : \n");
9     scanf("%d",&n);
10 }
11 void push()
12 {
13     if(top==maxsize-1)
14         printf("stack overflow\n");
15     else
16     {
17         top++;
18         stk[top]=convert();
19     }
20 }
21 int convert()
22 {
23     int r=0;
24     while(n>=0)
25     {
26         r=n%2;
27         n=n/2;
28         return r;
```



This screenshot shows the same OnlineGDB interface with the completed C code. The `main` function now includes a call to `display()` after `push()` and `convert()`. The `display()` function uses a `for` loop to print the elements of the stack in reverse order, resulting in the correct binary representation. The `convert()` function remains the same as in the previous screenshot.

```
24 while(n>=0)
25 {
26     r=n%2;
27     n=n/2;
28     return r;
29 }
30 }
31 void display()
32 {
33     int i=0;printf("binary equivalent is \n");
34     for(i=top-1;i>=0;i--)
35     {
36         printf("%d",stk[i]);
37     }
38 }
39 }
40 void main()
41 {
42     input();
43     while(n>0)
44     {
45         push();
46         display();
47     }
48 }
49 }
50 }
51 }
```

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```
main.c:18:18: warning: implicit declaration of function 'convert' [-Wimplicit-function-declaration]
enter the decimal number to be converted into binary :
6
binary equivalent is
110

...Program finished with exit code 1
Press ENTER to exit console.
```

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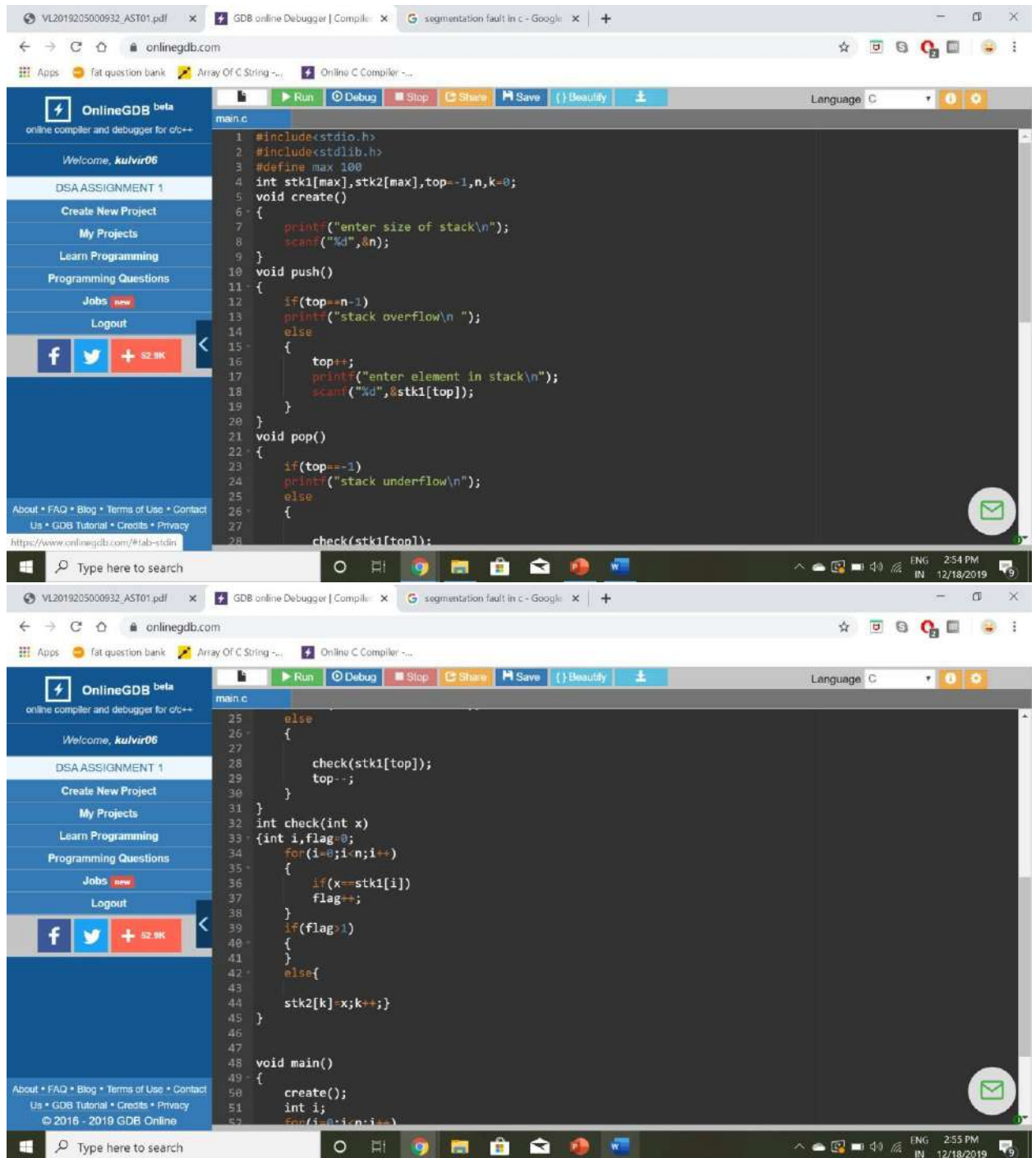
```
main.c:18:18: warning: implicit declaration of function 'convert' [-Wimplicit-function-declaration]
enter the decimal number to be converted into binary :
67
binary equivalent is
1000011

...Program finished with exit code 1
Press ENTER to exit console.
```

Type here to search

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3. Write a program to eliminate duplicates in a stack, including the original value. For eg., 2 3 5 9 9 5 7 8 2 reduces to 3 7 8

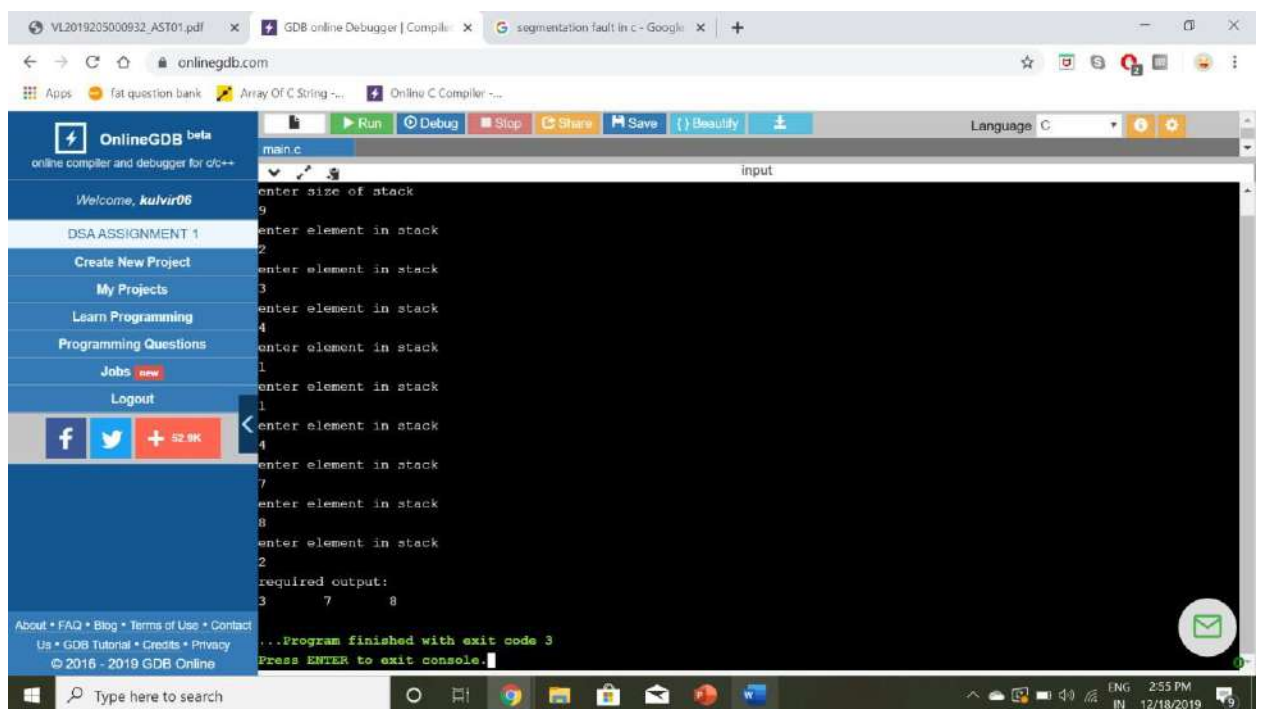
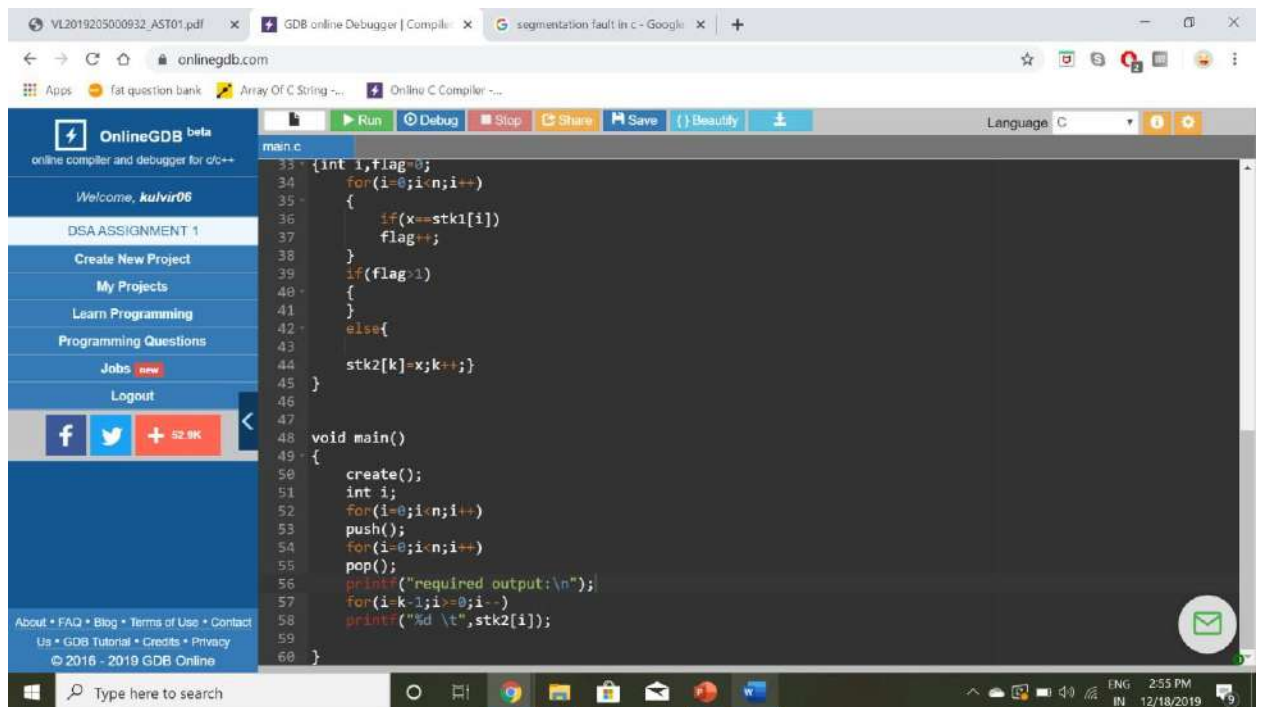


The screenshot displays the OnlineGDB website interface. The left sidebar contains navigation links such as 'Welcome, kulvir06', 'DSA ASSIGNMENT 1', 'Create New Project', 'My Projects', 'Learn Programming', 'Programming Questions', 'Jobs', and 'Logout'. The main editor area shows a C program for stack operations. The code includes headers for `stdio.h` and `stdlib.h`, a macro for `max` set to 100, and an array `stk1` of size `max`. Functions defined include `create()` for initializing the stack, `push()` for adding elements (with overflow checks), `pop()` for removing elements (with underflow checks), and `check(stk1[top])` for checking for duplicates. The `main` function calls `create()` and starts a loop to process input elements.

```
1 #include<stdio.h>
2 #include<stdlib.h>
3 #define max 100
4 int stk1[max],stk2[max],top=-1,n,k=0;
5 void create()
6 {
7     printf("enter size of stack\n");
8     scanf("%d",&n);
9 }
10 void push()
11 {
12     if(top==n-1)
13         printf("stack overFlow\n ");
14     else
15     {
16         top++;
17         printf("enter element in stack\n");
18         scanf("%d",&stk1[top]);
19     }
20 }
21 void pop()
22 {
23     if(top==-1)
24         printf("stack underflow\n");
25     else
26     {
27         check(stk1[top]);
28         top--;
```

```
25     else
26     {
27         check(stk1[top]);
28         top--;
29     }
30 }
31 }
32 int check(int x)
33 {int i,flag=0;
34 for(i=0;i<n;i++)
35 {
36     if(x==stk1[i])
37         flag++;
38 }
39 if(flag>1)
40 {
41 }
42 else{
43     stk2[k]=x;k++;
44 }
45 }
46 }
47 void main()
48 {
49     create();
50     int i;
51     for(i=0;i<n;i++)
```

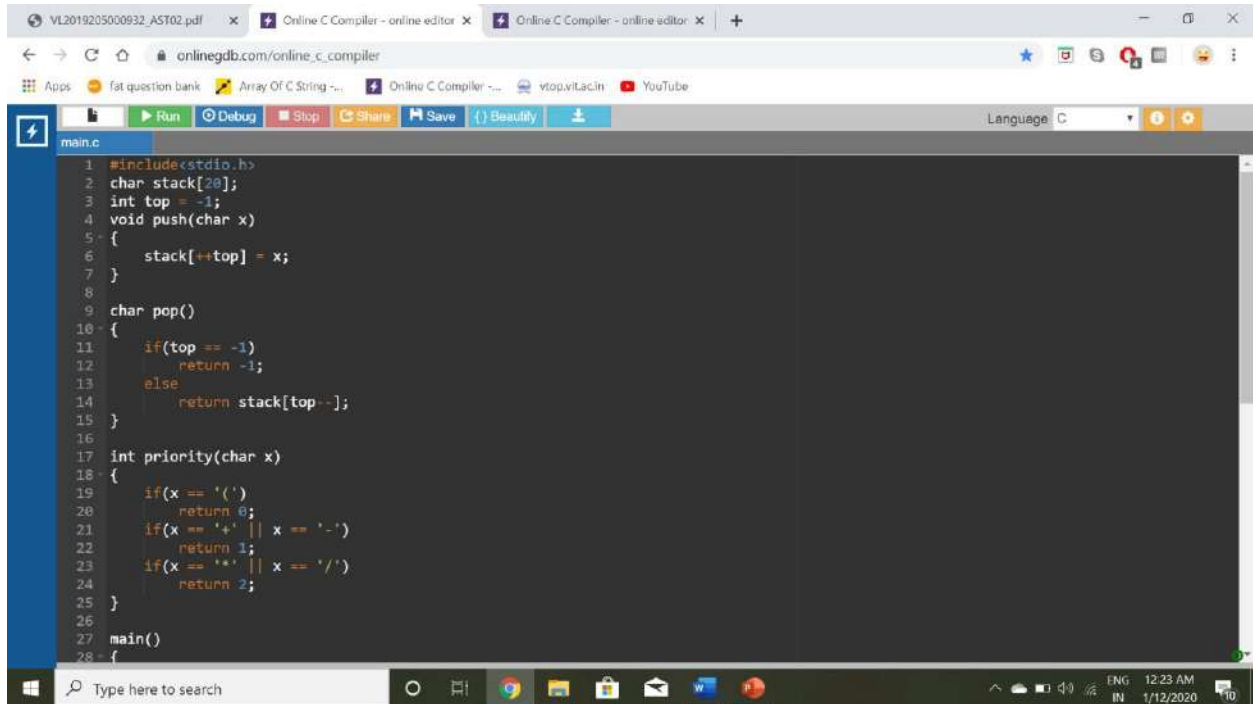




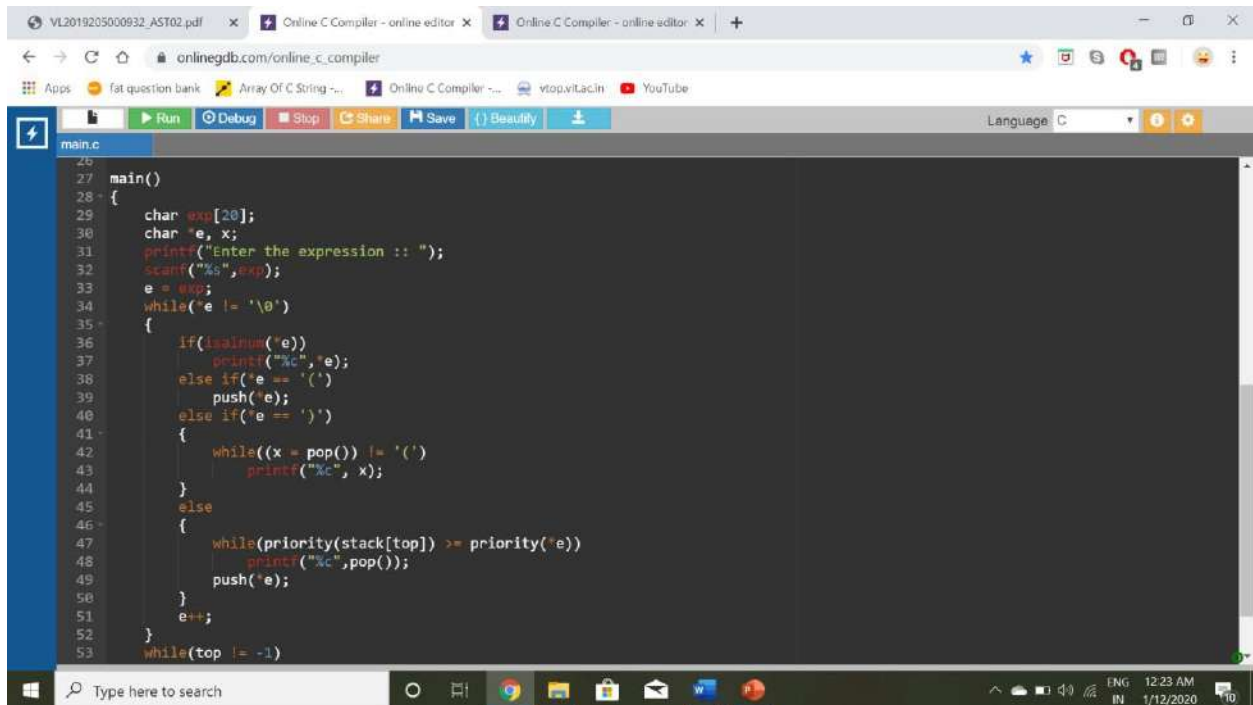
4. WAP to convert the following expression to its postfix equivalent using stack

a.  $((A + B) * D) ^ (E - F)$

b.  $A + (B * C - (D / E ^ F) * G) * H$  Where  $^$ : raise to the power



```
1 #include<stdio.h>
2 char stack[20];
3 int top = -1;
4 void push(char x)
5 {
6     stack[++top] = x;
7 }
8
9 char pop()
10 {
11     if(top == -1)
12         return -1;
13     else
14         return stack[top--];
15 }
16
17 int priority(char x)
18 {
19     if(x == '(')
20         return 0;
21     if(x == '+' || x == '-')
22         return 1;
23     if(x == '*' || x == '/')
24         return 2;
25 }
26
27 main()
28 {
```



```
26
27 main()
28 {
29     char exp[20];
30     char *e, x;
31     printf("Enter the expression :: ");
32     scanf("%s", exp);
33     e = exp;
34     while(*e != '\0')
35     {
36         if(isalnum(*e))
37             printf("%c", *e);
38         else if(*e == '(')
39             push(*e);
40         else if(*e == ')')
41         {
42             while((x = pop()) != '(')
43                 printf("%c", x);
44         }
45         else
46         {
47             while(priority(stack[top]) >= priority(*e))
48                 printf("%c", pop());
49             push(*e);
50         }
51         e++;
52     }
53     while(top != -1)
```

The screenshot shows a web browser window with the URL `onlinegdb.com/online_c_compiler`. The browser's address bar and tabs are visible at the top. Below the browser window is a Windows taskbar with the search bar and several application icons. The main content area displays a C program in a dark-themed editor. The program is a calculator that evaluates expressions using a stack. It prompts the user to "Enter the expression ::" and processes characters until a newline is encountered. It uses `isalnum` to check for operators and `push`/`pop` functions to manage a stack of operands. The program prints the result of the evaluation.

```
main.c
30 char *e, x;
31 printf("Enter the expression :: ");
32 scanf("%s", x);
33 e = x;
34 while(*e != '\0')
35 {
36     if(isalnum(*e))
37         printf("%c", *e);
38     else if(*e == '(')
39         push(*e);
40     else if(*e == ')')
41     {
42         while((x = pop()) != '(')
43             printf("%c", x);
44     }
45     else
46     {
47         while(priority(stack[top]) >= priority(*e))
48             printf("%c", pop());
49         push(*e);
50     }
51     e++;
52 }
53 while(top != -1)
54 {
55     printf("%c", pop());
56 }
57 }
```

a>

This screenshot shows the same online C compiler interface, but now displaying the output of the program. The C code is partially visible at the top. The main output area shows the program's execution: it prompts for an expression, the user enters `((A+B)*D)*(E-F)`, and the program outputs `AB+D*EF-*`. Below the output, it states "...Program finished with exit code 0" and "Press ENTER to exit console." A Windows taskbar is visible at the bottom. A semi-transparent notification box in the bottom right corner of the browser window indicates that the screenshot was saved to OneDrive.

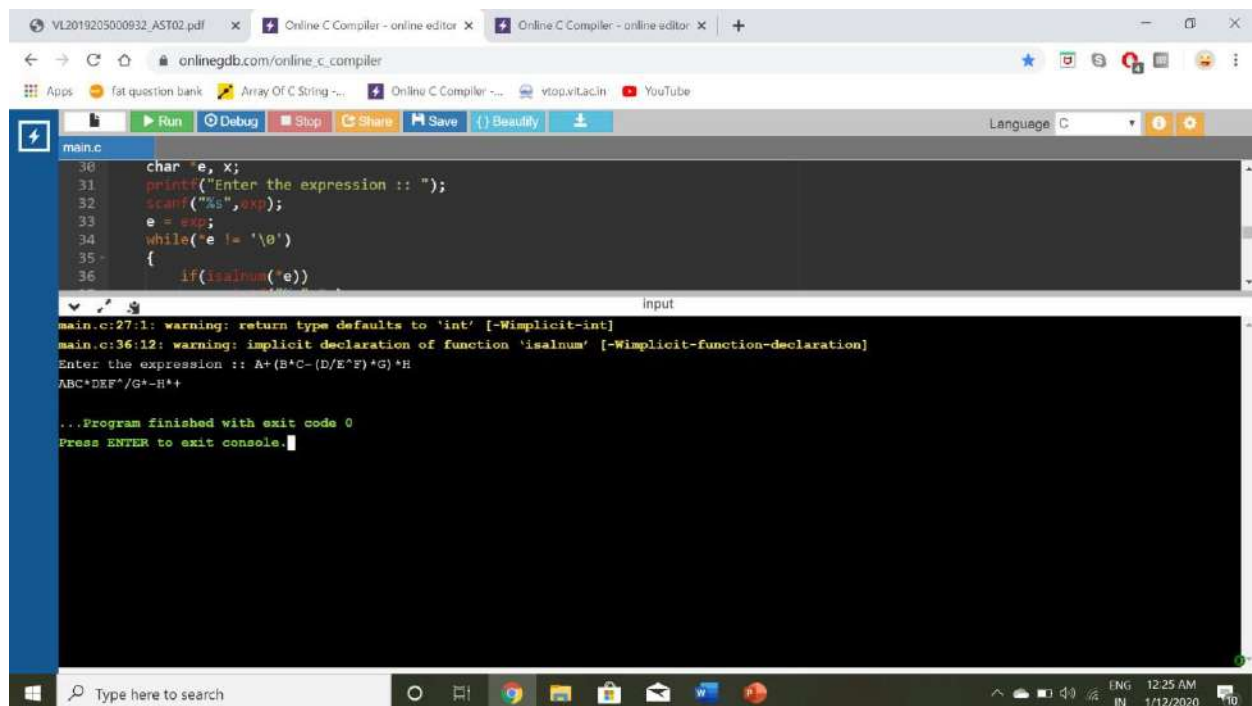
```
main.c
30 char *e, x;
31 printf("Enter the expression :: ");
32 scanf("%s", x);
33 e = x;
34 while(*e != '\0')
35 {
36     if(isalnum(*e))
37         printf("%c", *e);
38     else if(*e == '(')
39         push(*e);
40     else if(*e == ')')
41     {
42         while((x = pop()) != '(')
43             printf("%c", x);
44     }
45     else
46     {
47         while(priority(stack[top]) >= priority(*e))
48             printf("%c", pop());
49         push(*e);
50     }
51     e++;
52 }
53 while(top != -1)
54 {
55     printf("%c", pop());
56 }
57 }
```

main.c:27:1: warning: return type defaults to 'int' [-Wimplicit-int]  
main.c:36:12: warning: implicit declaration of function 'isalnum' [-Wimplicit-function-declaration]  
Enter the expression :: ((A+B)\*D)\*(E-F)  
AB+D\*EF-\*  
...Program finished with exit code 0  
Press ENTER to exit console.

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The screenshot was added to your OneDrive.



b>



The screenshot shows a web browser window with the URL `onlinegdb.com/online_c_compiler`. The code editor contains the following C code:

```
main.c
30 char *e, x;
31 printf("Enter the expression :: ");
32 scanf("%s", &x);
33 e = x;
34 while(*e != '\0')
35 {
36     if(isalnum(*e))
```

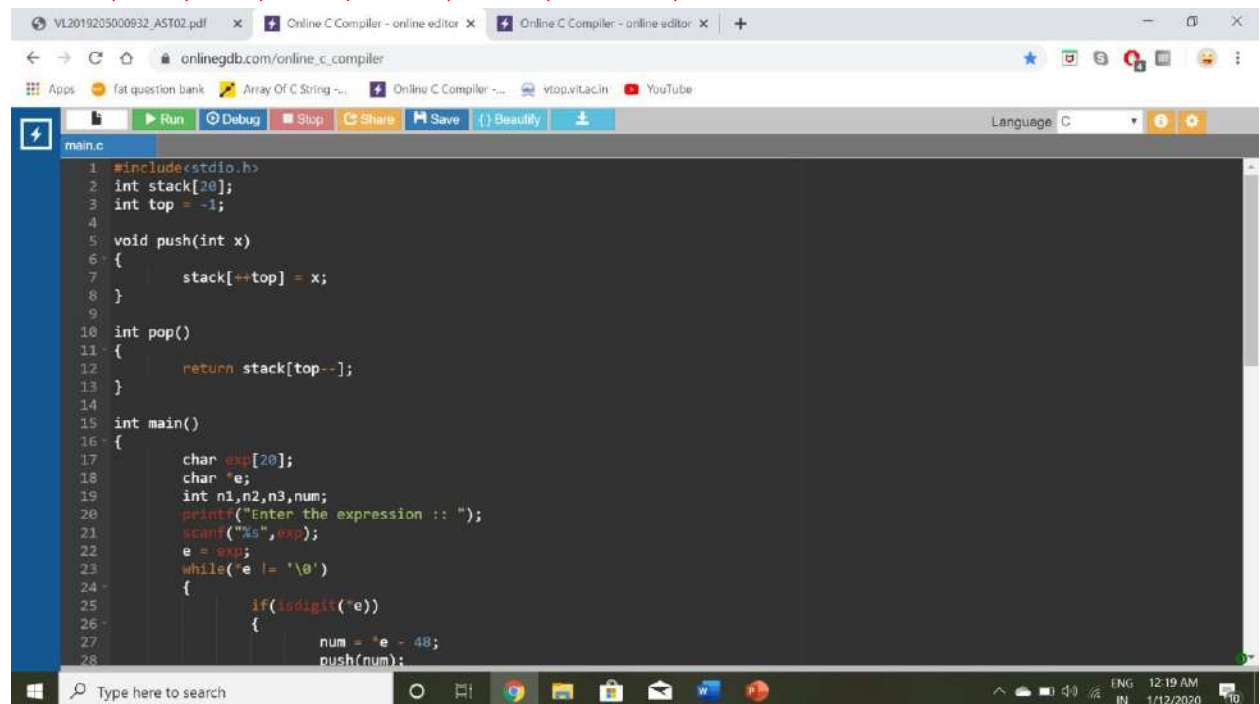
The console output shows the following:

```
main.c:27:1: warning: return type defaults to 'int' [-Wimplicit-int]
main.c:36:12: warning: implicit declaration of function 'isalnum' [-Wimplicit-function-declaration]
Enter the expression :: A*(B+C-(D/E*F)*G)*H
ABC*DEF*/G*-H*+
...Program finished with exit code 0
Press ENTER to exit console.
```

5> Implement a program to evaluate any given postfix expression. Test your program for the evaluation of the equivalent postfix form of the expression

$(-(A*B)/D) \uparrow C + E - F * H * I$

for A = 1, B = 2, D = 3, C = 14, E = 110, F = 220, H = 16.78, I = 364.621.



The screenshot shows a web browser window with the URL `onlinegdb.com/online_c_compiler`. The code editor contains the following C code:

```
main.c
1 #include<stdio.h>
2 int stack[20];
3 int top = -1;
4
5 void push(int x)
6 {
7     stack[++top] = x;
8 }
9
10 int pop()
11 {
12     return stack[top--];
13 }
14
15 int main()
16 {
17     char exp[20];
18     char *e;
19     int n1,n2,n3,num;
20     printf("Enter the expression :: ");
21     scanf("%s", &exp);
22     e = exp;
23     while(*e != '\0')
24     {
25         if(isdigit(*e))
26         {
27             num = *e - 48;
28             push(num);
```

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```
main.c
27 num = e - 40;
28 push(num);
29 }
30 else
31 {
32     n1 = pop();
33     n2 = pop();
34     switch(*e)
35     {
36         case '+':
37         {
38             n3 = n1 + n2;
39             break;
40         }
41         case '-':
42         {
43             n3 = n2 - n1;
44             break;
45         }
46         case '*':
47         {
48             n3 = n1 * n2;
49             break;
50         }
51         case '/':
52         {
53             n3 = n2 / n1;
54             break;
```

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```
main.c
42 {
43     n3 = n2 - n1;
44     break;
45 }
46 case '*':
47 {
48     n3 = n1 * n2;
49     break;
50 }
51 case '/':
52 {
53     n3 = n2 / n1;
54     break;
55 }
56 case '^':
57 {
58     n3 = n2^n1;
59     break;
60 }
61 }
62 push(n3);
63 }
64 e++;
65 }
66 printf("\nThe result of expression %s = %d\n",exp,pop());
67 return 0;
68 }
69 }
```

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main.c

```
42 {
43     n3 = n2 - n1;
44     break;
45 }
46 case '*':
47 {
```

input

main.c:25:20: warning: implicit declaration of function 'isdigit' [-Wimplicit-function-declaration]  
Enter the expression :: -1\*2/3^14+110-220\*16\*364

The result of expression  $-1 \cdot 2 / 3^{14} + 110 - 220 \cdot 16 \cdot 364 = 4$

...Program finished with exit code 0  
Press ENTER to exit console.

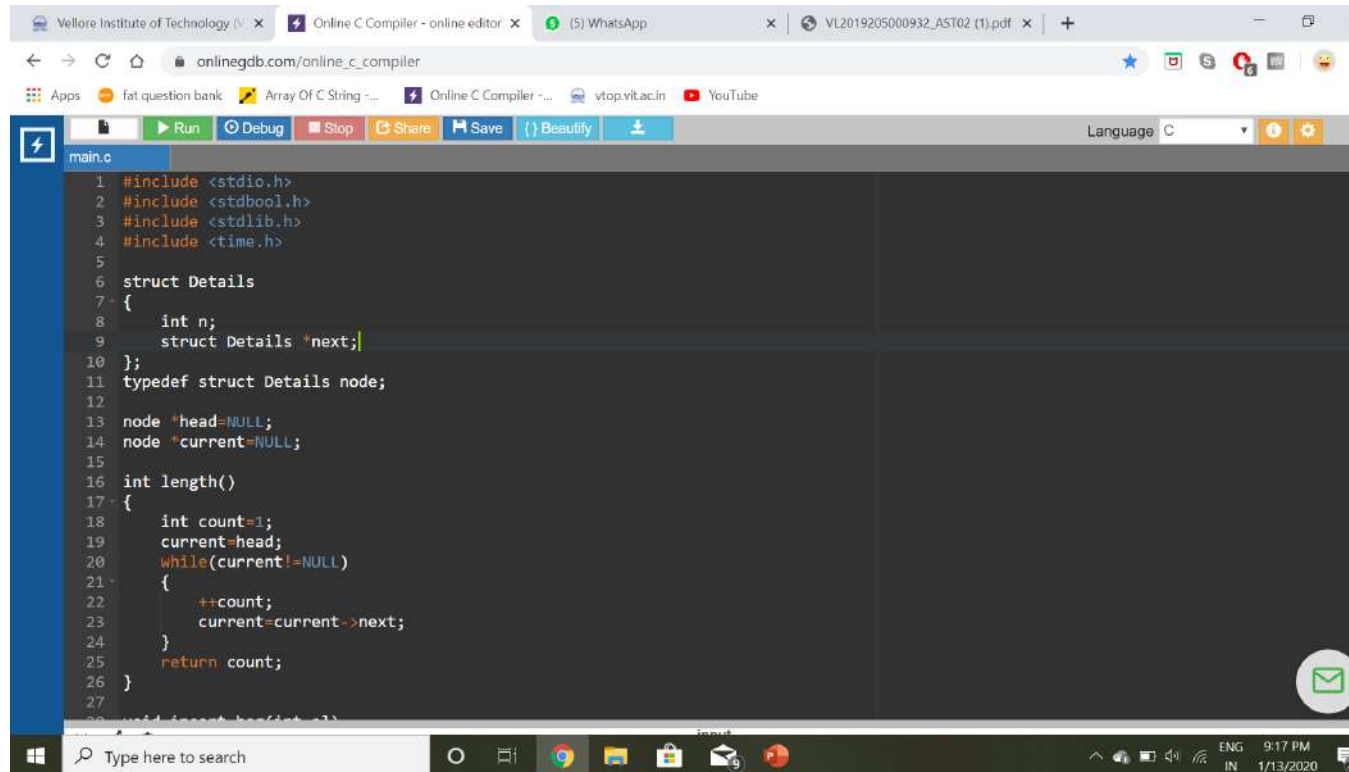
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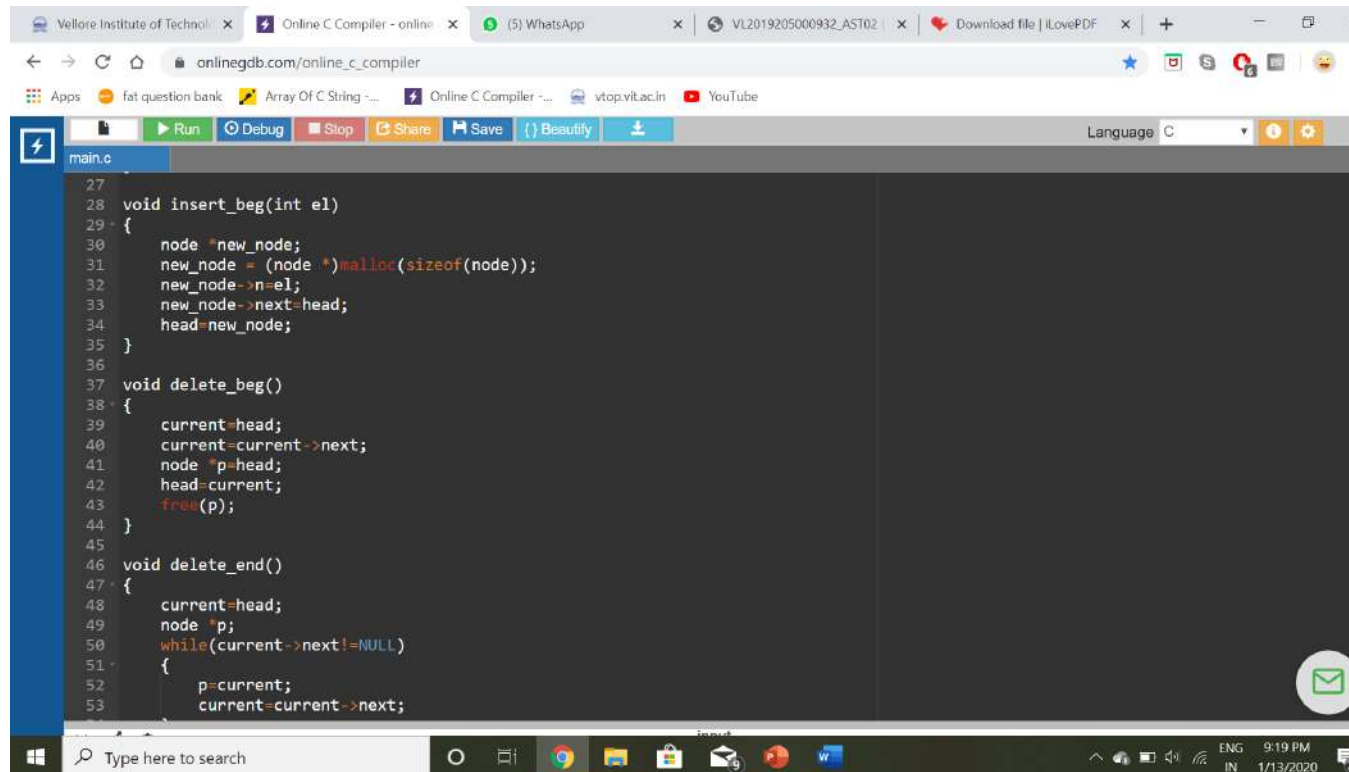
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### Question 9

Given a linked list and two integers M and N. Write a C/C++ Program to traverse the linked list such that you retain M nodes then delete next N nodes, continue the same until end of the linked list.



```
main.c
1 #include <stdio.h>
2 #include <stdbool.h>
3 #include <stdlib.h>
4 #include <time.h>
5
6 struct Details
7 {
8     int n;
9     struct Details *next;
10 };
11 typedef struct Details node;
12
13 node *head=NULL;
14 node *current=NULL;
15
16 int length()
17 {
18     int count=1;
19     current=head;
20     while(current!=NULL)
21     {
22         ++count;
23         current=current->next;
24     }
25     return count;
26 }
27
28 void insert_beg(int el)
```



```
main.c
27
28 void insert_beg(int el)
29 {
30     node *new_node;
31     new_node = (node *)malloc(sizeof(node));
32     new_node->n=el;
33     new_node->next=head;
34     head=new_node;
35 }
36
37 void delete_beg()
38 {
39     current=head;
40     current=current->next;
41     node *p=head;
42     head=current;
43     free(p);
44 }
45
46 void delete_end()
47 {
48     current=head;
49     node *p;
50     while(current->next!=NULL)
51     {
52         p=current;
53         current=current->next;
54     }
55     p->next=NULL;
56 }
```





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Language C

```
main.c
105 scanf("%d",&num);
106 printf("\nAdding Random elements");
107
108 for(i=0;i<num;i++)
109 {
110     insert_beg(rand()%50+1);
111 }
112 traverse();
113
114 int M,N;
115 printf("Enter the values of M and N\n");
116 printf("M = ");
117 scanf("%d",&M);
118 printf("N = ");
119 scanf("%d",&N);
120
121 int count=0;
122 _Bool m_or_n=false;
123 i=1;
124 while(i<=num)
125 {
126     if(m_or_n==false && count==M)
127     {
128         count=0;
129         m_or_n=true;
130     }
131     else if(m_or_n==true && count==N)
```

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Language C

```
main.c
122 _Bool m_or_n=false;
123 i=1;
124 while(i<=num)
125 {
126     if(m_or_n==false && count==M)
127     {
128         count=0;
129         m_or_n=true;
130     }
131     else if(m_or_n==true && count==N)
132     {
133         count=0;
134         m_or_n=false;
135     }
136     ++count;
137
138     if(m_or_n==true)
139     {
140         delete_mid(i);
141         --num;
142         traverse();
143         continue;
144     }
145
146     ++i;
147 }
148 }
```

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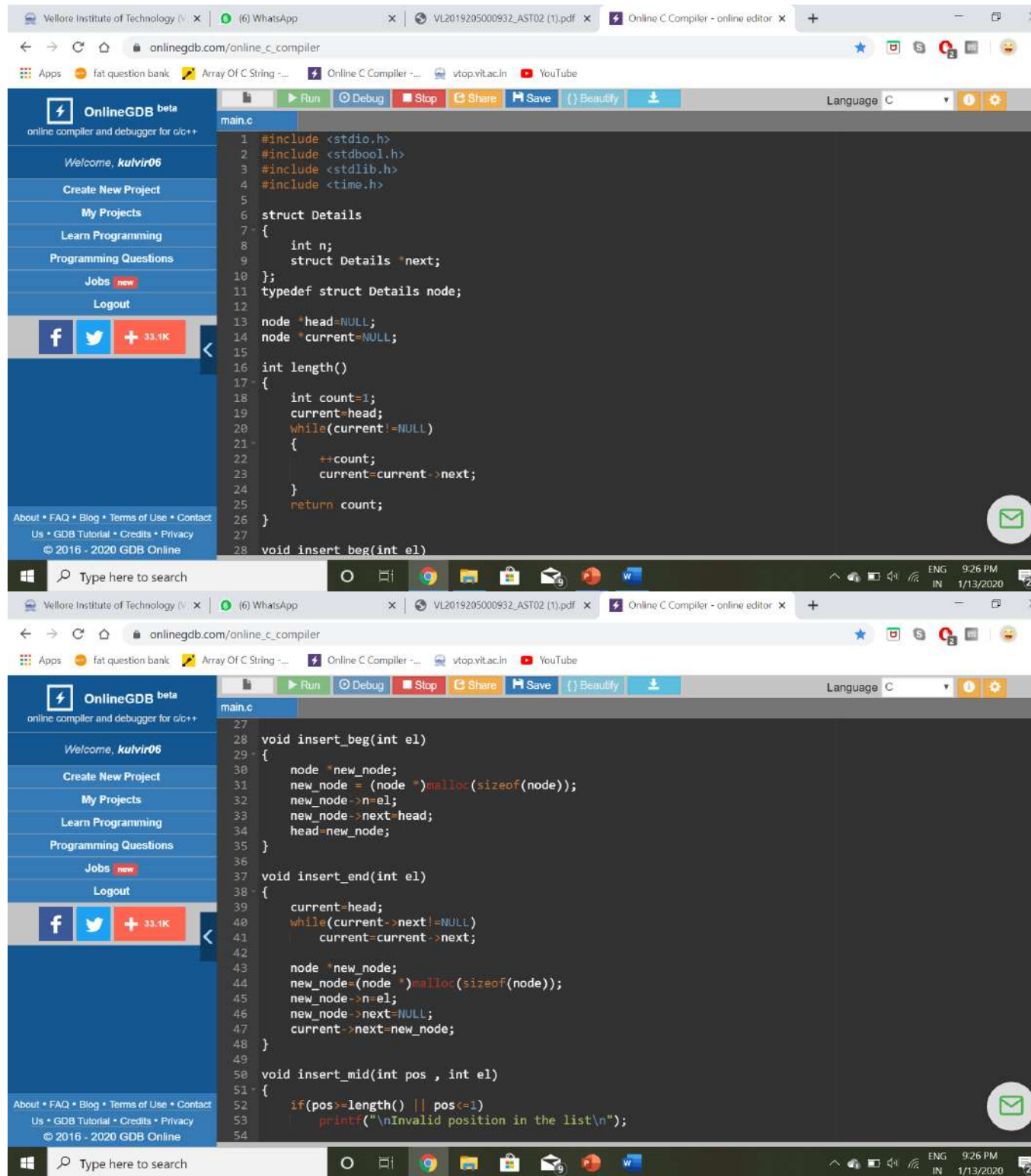
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Language C

100%

## Question 6

Write a program to implement the following operations on singly linked list a. Insertion b. Deletion c. Search d. Print the data in reverse order



```
main.c
1 #include <stdio.h>
2 #include <stdbool.h>
3 #include <stdlib.h>
4 #include <time.h>
5
6 struct Details
7 {
8     int n;
9     struct Details *next;
10 };
11 typedef struct Details node;
12
13 node *head=NULL;
14 node *current=NULL;
15
16 int length()
17 {
18     int count=1;
19     current=head;
20     while(current!=NULL)
21     {
22         ++count;
23         current=current->next;
24     }
25     return count;
26 }
27
28 void insert_beg(int e1)
29 {
30     node *new_node;
31     new_node = (node *)malloc(sizeof(node));
32     new_node->n=e1;
33     new_node->next=head;
34     head=new_node;
35 }
36
37 void insert_end(int e1)
38 {
39     current=head;
40     while(current->next!=NULL)
41         current=current->next;
42
43     node *new_node;
44     new_node=(node *)malloc(sizeof(node));
45     new_node->n=e1;
46     new_node->next=NULL;
47     current->next=new_node;
48 }
49
50 void insert_mid(int pos , int e1)
51 {
52     if(pos>length() || pos<=1)
53         printf("\nInvalid position in the list\n");
54 }
```

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main.c

```
55 else
56 {
57     current=head;
58     node *p;
59     int i=1;
60     while(i<pos)
61     {
62         p=current;
63         current=current->next;
64         ++i;
65     }
66
67     node *new_node;
68     new_node=(node *)malloc(sizeof(node));
69     new_node->n=i;
70     new_node->next=current;
71     p->next=new_node;
72 }
73
74
75 void delete_beg()
76 {
77     current=head;
78     current=current->next;
79     node *p=head;
80     head=current;
81     free(p);
82 }
```

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main.c

```
83
84 void delete_end()
85 {
86     current=head;
87     node *p;
88     while(current->next!=NULL)
89     {
90         p=current;
91         current=current->next;
92     }
93     p->next=NULL;
94     free(current);
95 }
96
97 void delete_mid(int pos)
98 {
99     if(pos==length())
100         delete_end();
101     else if(pos==1)
102         delete_beg();
103     else if(pos<1 || pos>length())
104         printf("\nInvalid position in the list\n");
105
106     else
107     {
108         int i=1;
109         current=head;
110         node *p;
```

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main.c

```
110 node *p;
111 while(i<pos)
112 {
113     ++i;
114     p=current;
115     current=current->next;
116 }
117 p->next=current->next;
118 free(current);
119 }
120 }
121
122 void traverse()
123 {
124     static count=0;
125     int a=0;
126     current=head;
127     printf("\n\t(%d)\n",++count);
128     while(current!=NULL)
129     {
130         printf("\n[ %d ]\t--\t%u\t--\t%u\t--\t%u\t--\t%u",++a,current,current->n,current->next);
131         current=current->next;
132     }
133     printf("\n\n");
134 }
135
136 void Search(int el)
137 {
```

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main.c

```
138 current=head;
139 int i=0;
140 while(current!=NULL)
141 {
142     ++i;
143     if(current->n==el)
144         printf("\nElement found at position ( %d ) in List\n",i);
145     current=current->next;
146 }
147 }
148 }
149
150 void Reverse_list()
151 {
152     current=head;
153     node *p;
154     node *q=NULL;
155     while(current->next!=NULL)
156     {
157         p=current;
158         current=current->next;
159         p->next=q;
160         q=p;
161     }
162     current->next=p;
163     head=current;
164 }
165 }
```

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main.c

```
162     current->next=p;
163     head=current;
164 }
165
166 void main()
167 {
168     srand(time(NULL));
169
170     printf("Enter the number of elements in the Linked List :\t");
171     int num,i;
172     scanf("%d",&num);
173     printf("\nAdding Random elements");
174
175     for(i=0;i<num;i++)
176     {
177         insert_beg(rand()%20+1);
178     }
179     traverse();
180     printf("\nEnter a search element :\t");
181     int search;
182     scanf("%d",&search);
183     Search(search);
184
185     printf("\nReversing list\n");
186     Reverse_list();
187     traverse();
188
189 }
```

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## Question 8

Write a C/C++ program to implement the queue operations using linked list.

```
1 #include <stdio.h>
2 #include <string.h>
3 #include <stdlib.h>
4
5 struct Details
6 {
7     int num;
8     struct Details *next;
9 };
10
11 typedef struct Details node;
12
13 node *front=NULL;
14 node *rear=NULL;
15
16 void insert_end(int el)
17 {
18     if(front==NULL && rear==NULL)
19     {
20         node *new_node;
21         new_node=(node *)malloc(sizeof(node));
22         new_node->num=el;
23         new_node->next=NULL;
24         rear=new_node;
25         front=new_node;
26     }
27     else
28     {
29         node *new_node;
30         new_node=(node *)malloc(sizeof(node));
31         new_node->num=el;
32         new_node->next=NULL;
33         rear->next=new_node;
34         rear=new_node;
35     }
36 }
37
38 int delete_beg()
39 {
40     int x;
41     if(front==rear)
42     {
43         x=front->num;
44         front=NULL;
45         rear=NULL;
46     }
47     else
48     {
49         x=front->num;
50         front=front->next;
51     }
52     return x;
53 }
54 }
```

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main.c

```
52
53     return x;
54 }
55
56 void traverse()
57 {
58     static int count=0;
59
60     node *current=front;
61     printf("\n\t( %d )\n",++count);
62     while(current!=NULL)
63     {
64         printf("\n%u\t--\t%d\t--\t%u",current,current->num,current->next);
65
66         if(current==front && current==rear)
67             printf("\t-->\tFRONT AND REAR");
68         else if(current==rear)
69             printf("\t-->\tREAR");
70         else if(current==front)
71             printf("\t-->\tFRONT");
72
73         current=current->next;
74     }
75     printf("\n\n");
76 }
77
78 void main()
79 {
```

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main.c

```
75     printf("\n\n");
76 }
77
78 void main()
79 {
80     printf("Enter commands to for Queue \nimplemented using Linked List\n\n");
81     printf("( 1 ) < insert >\t( 2 ) < delete >\t( 3 ) < display >\t( 4 ) < break >\n\n");
82
83     char command[20];
84     int count_comm=0;
85     int element;
86     while(1)
87     {
88         printf("\nCommand ::\t");
89         scanf("%s",command);
90
91         if(strcmp(command,"insert")==0 || strcmp(command,"1")==0)
92         {
93             printf("\nEnter an element :\t");
94             scanf("%d",&element);
95             insert_end(element);
96             printf("\n");
97         }
98         else if( ( strcmp(command,"delete")==0 || strcmp(command,"2")==0 )
99                 && front!=NULL && rear!=NULL )
100         {
101             printf("\nElement returned :\t%d\n",delete_beg());
102         }
```

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main.c

```
101 printf("\nElement returned : \t%d\n", delete_beg());
102 }
103 else if ( strcmp(command, "delete")==0 || strcmp(command, "2")==0 )
104     && front==NULL && rear==NULL)
105 {
106     printf("\nLinked Queue Underflow\n");
107 }
108 else if(strcmp(command, "display")==0 || strcmp(command, "3")==0)
109 {
110     traverse();
111 }
112 else if(strcmp(command, "break")==0 || strcmp(command, "4")==0)
113 {
114     printf("\nBreak Function\n");
115     break;
116 }
117 else
118 {
119     printf("\nInvalid Command ! Try Again\n");
120     continue;
121 }
122 //system("pause");
123 ++count_comm;
124 }
125
126 printf("\nCommands given = %d\n", count_comm);
127
128 }
```

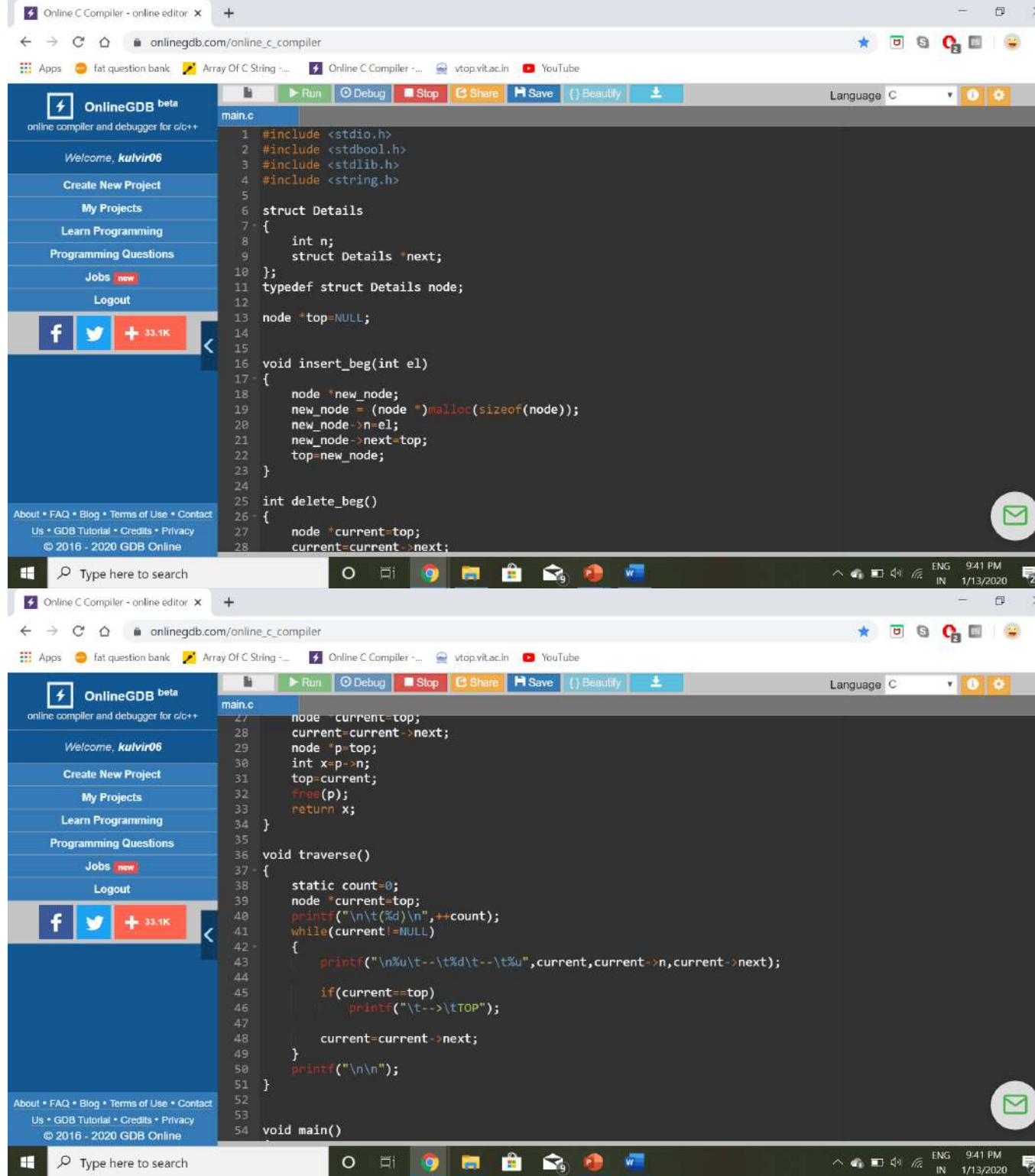
input

```
main.c:64:20: warning: format '%u' expects argument of type 'unsigned int', but argument 2 has type 'node * (aka struct
t Details *)' [-Wformat=]
main.c:64:36: warning: format '%u' expects argument of type 'unsigned int', but argument 4 has type 'struct Details *'
[-Wformat=]
Enter commands to for Queue
implemented using Linked List
( 1 ) < insert >      ( 2 ) < delete >
( 3 ) < display >      ( 4 ) < break >
Command ::          1
Enter an element :    435
Command ::          3
( 1 )
17272848 -- 435 -- 0 --> FRONT AND REAR
Command ::
```



### Question 7

Write a C/C++ program to implement the stack operations using linked list.



The screenshot displays an online C compiler interface with a sidebar on the left containing navigation links like 'Welcome, kulvir06', 'Create New Project', 'My Projects', 'Learn Programming', 'Programming Questions', 'Jobs', and 'Logout'. The main editor area shows a C program for implementing stack operations using a linked list. The code includes headers for stdio, stdbool, stdlib, and string. It defines a 'struct Details' with an integer 'n' and a pointer to 'struct Details \*next'. A typedef 'node' is used for 'struct Details'. The 'top' pointer is initialized to NULL. The 'insert\_beg' function takes an integer 'el' and creates a new node, allocating memory with 'malloc', setting 'n' to 'el', and linking it to the current 'top' node. The 'delete\_beg' function removes the top node by updating 'current' to 'current->next'. The 'traverse' function prints the elements of the linked list. The 'main' function is partially visible at the bottom.

```
main.c
1 #include <stdio.h>
2 #include <stdbool.h>
3 #include <stdlib.h>
4 #include <string.h>
5
6 struct Details
7 {
8     int n;
9     struct Details *next;
10 };
11 typedef struct Details node;
12
13 node *top=NULL;
14
15
16 void insert_beg(int el)
17 {
18     node *new_node;
19     new_node = (node *)malloc(sizeof(node));
20     new_node->n=el;
21     new_node->next=top;
22     top=new_node;
23 }
24
25 int delete_beg()
26 {
27     node *current=top;
28     current=current->next;
```

```
27
28     current=current->next;
29     node *p=top;
30     int x=p->n;
31     top=current;
32     free(p);
33     return x;
34 }
35
36 void traverse()
37 {
38     static count=0;
39     node *current=top;
40     printf("\n\t(%d)\n",++count);
41     while(current!=NULL)
42     {
43         printf("\n\t\t--\t%d\t\t--\t\t\t",current,current->n,current->next);
44
45         if(current==top)
46             printf("\t-->\tTOP");
47
48         current=current->next;
49     }
50     printf("\n\n");
51 }
52
53
54 void main()
```



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main.c

```
54 void main()
55 {
56     printf("Enter commands to for Stack \nimplemented using Linked List\n\n");
57     printf("( 1 ) < push >\t( 2 ) < pop >\n( 3 ) < display >\t( 4 ) < break >\n\n");
58
59     char command[20];
60     int count_comm=0;
61     int element;
62     while(1)
63     {
64         printf("\nCommand ::\t");
65         scanf("%s",command);
66
67         if(strcmp(command,"push")==0 || strcmp(command,"1")==0)
68         {
69             printf("\nEnter an element :\t");
70             scanf("%d",&element);
71             insert_beg(element);
72             printf("\n");
73         }
74         else if( ( strcmp(command,"pop")==0 || strcmp(command,"2")==0 ) && top!=NULL)
75         {
76             printf("\nElement returned :\t%d\n",delete_beg());
77         }
78         else if( ( strcmp(command,"pop")==0 || strcmp(command,"2")==0 ) && top==NULL)
79         {
80             printf("\nLinked Stack Underflow\n");
81         }
82     }
```

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main.c

```
74     else if( ( strcmp(command,"pop")==0 || strcmp(command,"2")==0 ) && top!=NULL)
75     {
76         printf("\nElement returned :\t%d\n",delete_beg());
77     }
78     else if( ( strcmp(command,"pop")==0 || strcmp(command,"2")==0 ) && top==NULL)
79     {
80         printf("\nLinked Stack Underflow\n");
81     }
82     else if(strcmp(command,"display")==0 || strcmp(command,"3")==0)
83     {
84         traverse();
85     }
86     else if(strcmp(command,"break")==0 || strcmp(command,"4")==0)
87     {
88         printf("\nBreak Function\n");
89         break;
90     }
91     else
92     {
93         printf("\nInvalid Command ! Try Again ");
94         continue;
95     }
96     //system("pause");
97     ++count_comm;
98 }
99
100 printf("\nCommands given = %d\n",count_comm);
101 }
```

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