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Subject: Data Structures

Practical – 10

Aim: Program to implement stack and print MAX data item from it.

Program:

```
#include <stdio.h>
#include <stdlib.h>
int N = 50, s[50], count = 0;

// check wheather stack is full or not
int isFull()
{
    if (count != N)
    {
        return 0;
    }
    else
    {
        return 1;
    }
}

// check wheather stack is empty or not
int isEmpty()
{
    if (count == 0)
    {
        return 1;
    }
    else
    {
        return 0;
    }
}

// inset element at top
void push(int data)
{
```

```
    if (isFull())
    {
        return;
    }
    else
    {
        s[count] = data;
        count++;
    }
}

// seek function gives element at index i
int seek(int i)
{
    return s[i];
}

// remove element at top
void pop()
{
    if (isEmpty())
    {
        return;
    }
    else
    {
        count--;
    }
}

int maxElement()
{
    int max = -1;
    for (int i = 0; i < count; i++)
    {
        int temp = seek(i);
        if (max < temp)
        {
            max = temp;
        }
    }
    return max;
}

// print stack
void printStack()
{
    if (isEmpty() == 1)
    {
        printf("\nStack is empty");
    }
}
```

```
    }  
    else  
    {  
        printf("Stack goes here : \n");  
        for (int i = 0; i < count; i++)  
        {  
            printf("%d --> %d\n", i, s[i]);  
        }  
    }  
}  
int main()  
{  
    push(10);  
    push(20);  
    push(30);  
    push(25);  
    push(15);  
    printStack();  
  
    printf("\nMax element in Stack = %d", maxElement());  
    return 0;  
}
```

Output:

Stack goes here :

0 --> 10

1 --> 20

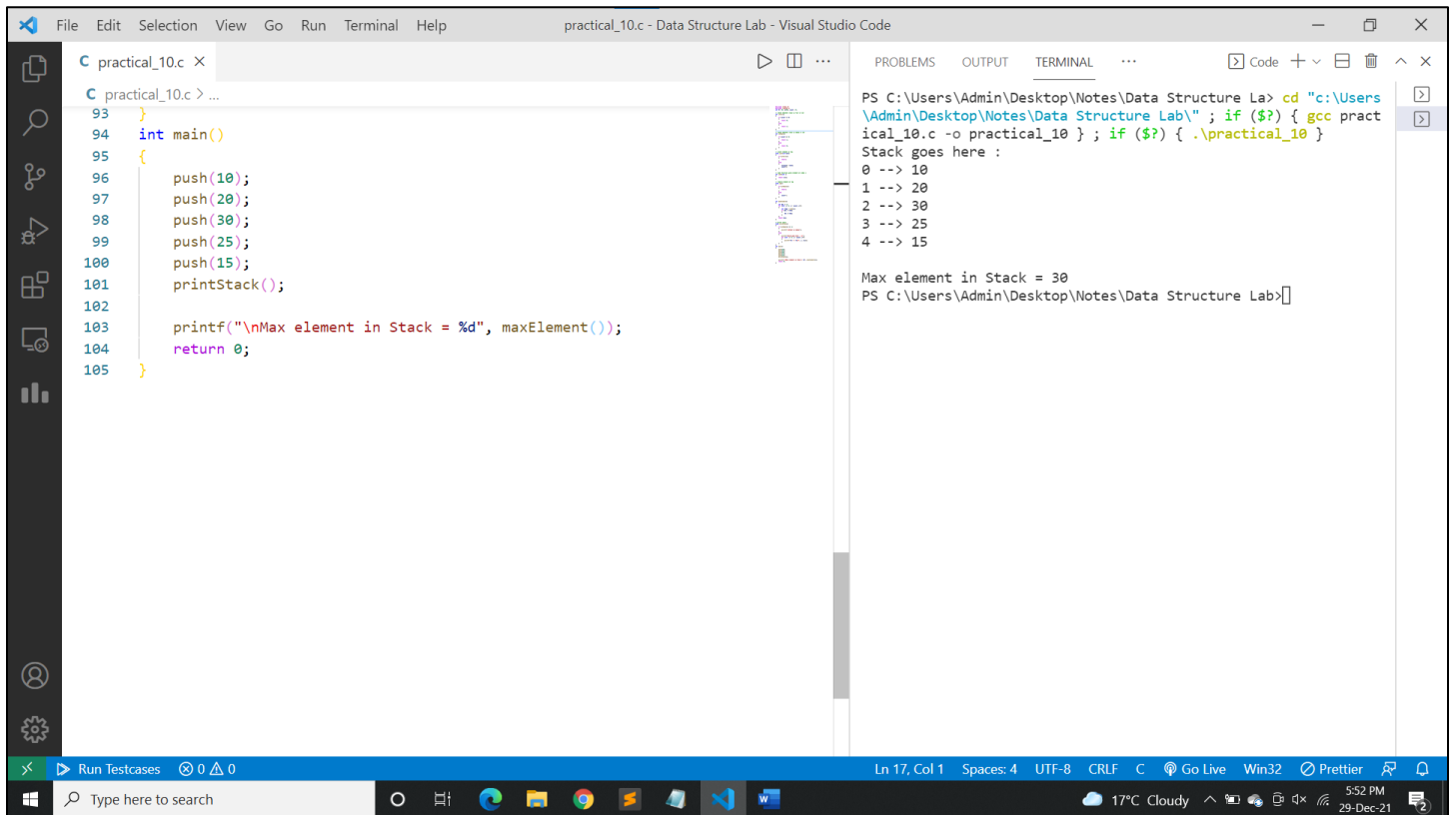
2 --> 30

3 --> 25

4 --> 15

Max element in Stack = 30

Screenshot:



The screenshot displays the Visual Studio Code editor with a C program named `practical_10.c` open. The code implements a stack with `push` and `printStack` functions. The `main` function pushes the values 10, 20, 30, 25, and 15 onto the stack, then prints the stack contents and the maximum element (30).

```
practical_10.c > ...
93 }
94 int main()
95 {
96     push(10);
97     push(20);
98     push(30);
99     push(25);
100    push(15);
101    printStack();
102
103    printf("\nMax element in Stack = %d", maxElement());
104    return 0;
105 }
```

The output window shows the execution results:

```
PS C:\Users\Admin\Desktop\Notes\Data Structure Lab> cd "c:\Users\
Admin\Desktop\Notes\Data Structure Lab\" ; if ($?) { gcc pract
ical_10.c -o practical_10 } ; if ($?) { .\practical_10 }
Stack goes here :
0 --> 10
1 --> 20
2 --> 30
3 --> 25
4 --> 15

Max element in Stack = 30
PS C:\Users\Admin\Desktop\Notes\Data Structure Lab>
```

Conclusion: I have successfully completed practical 10.