Data Structures and Algorithms

Lab Report

Lab05

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Class	Data Structures and Algorithms CSC211 (**BCE-3B**)
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Pre-Lab Task

Task:1

Implement the peek function to familiarize yourself with this implementation of stack.

Solution:

The code is shown below,

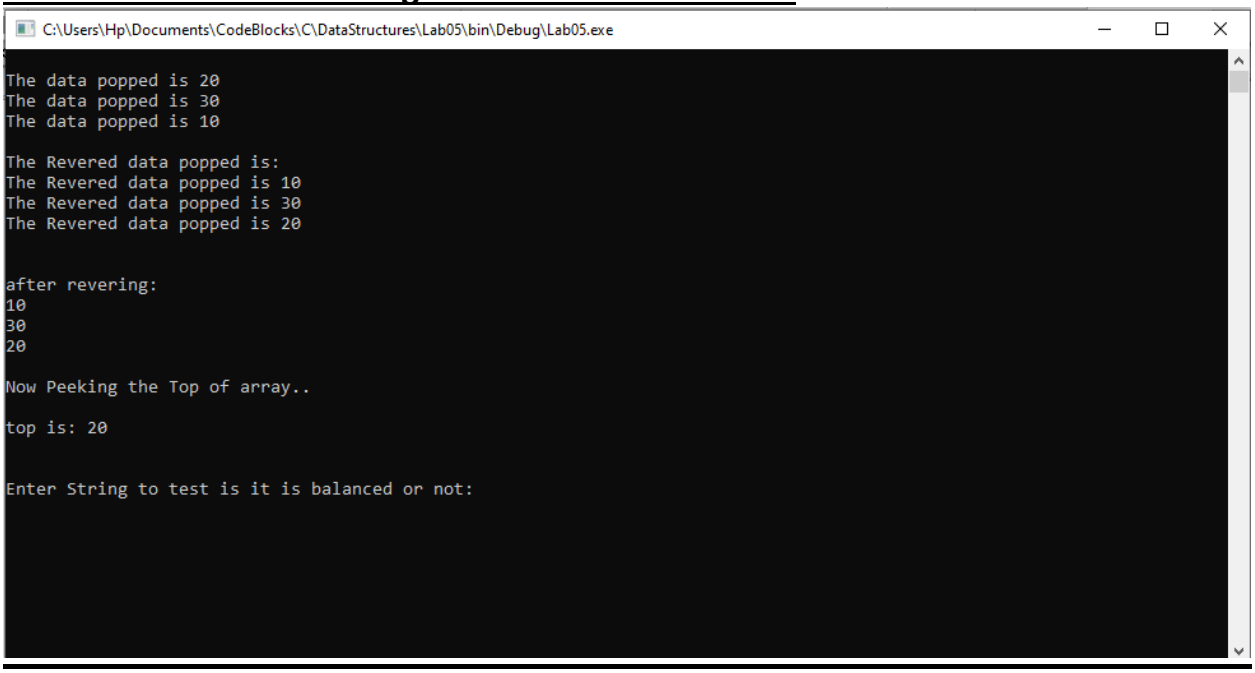
```
struct element peek(struct node * top)
{

    struct element temp = top->data ;  /// I copy the data at the top node into a temporary variable

    return(temp);

}
```

The Result of the following code is attached below:



In Lab Tasks

Task:1

Reversing an array of numbers.

Solution:

The code is shown below,

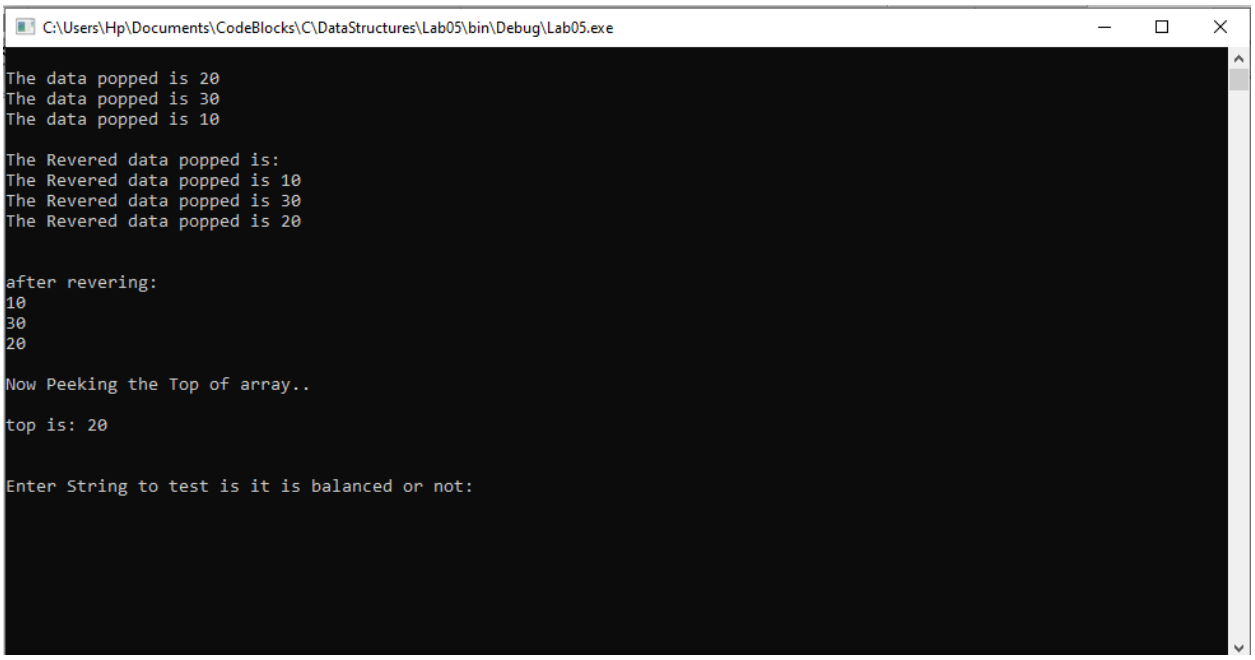
```
void reverse_num_array(int * num_array)
{
struct node * ptr=NULL;
for(int i=0;i<3;i++)
{

struct element data;
data.d=*(num_array+i);
data.d_type=0;
    push(&ptr,data);
}
printf("\n\nThe Revered data popped is:\n");
   for(int j = 0; j<3; j++)
    {
        struct element templ;

        templ = pop(&ptr);


        if(templ.d_type == 0)
           {
               printf("The Revered data popped is %d\n", templ.d);
          }
        else
            printf("\nThe data popped is %c", templ.ch);
    }
 printf("\n\nafter revering:\n");
for(int a=2; a>=0;a--)
{
printf("%d\n",*(num_array+a));
}
}
```

The Result of the following code is attached below:



Task:2

Testing if a mathematical expression is balanced or not.

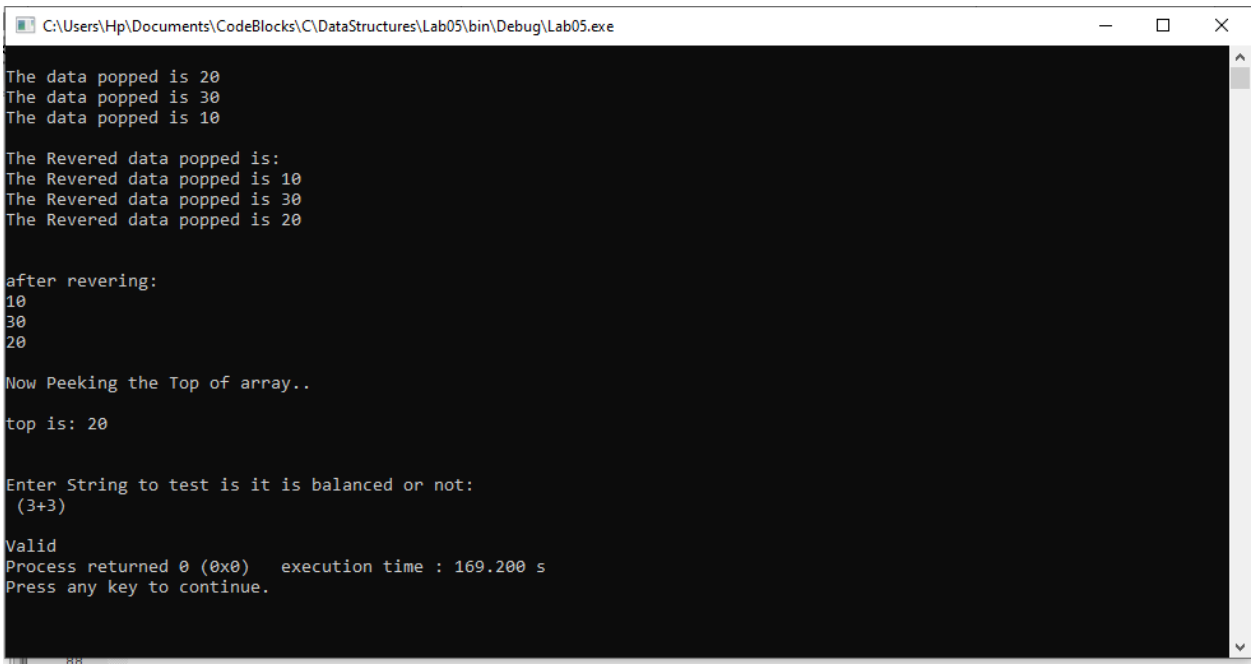
Solution

The code is shown below,

```c
int isBalanced(char * ptr_array)
{
    int i=0;
    int count = 0;
  while (*(ptr_array+i) != '\0')
  {
    if (*(ptr_array+i) == '}')
        count--;
    if (*(ptr_array+i) == '{')
        count++;
    if (*(ptr_array+i) == ')')
        count--;
    if (*(ptr_array+i) == '(')
        count++;

    i++;
  }
   if (count < 0||  count>0)
    {
        printf("\nInvalid");
    }
  if (count == 0)
      printf("\nValid");
  return 0;
}
```

The Result of the following code is attached below:



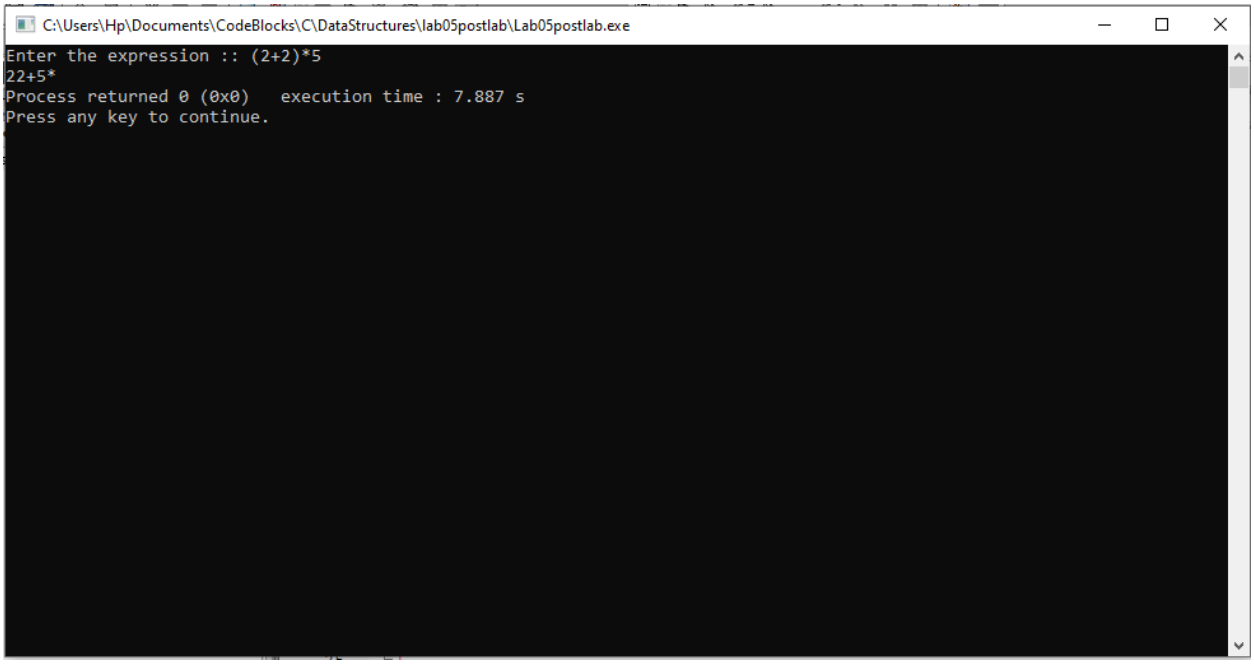
POST LAB

Question no:3

Infix to postfix conversion

Solution

The Result of the following code is attached below:



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