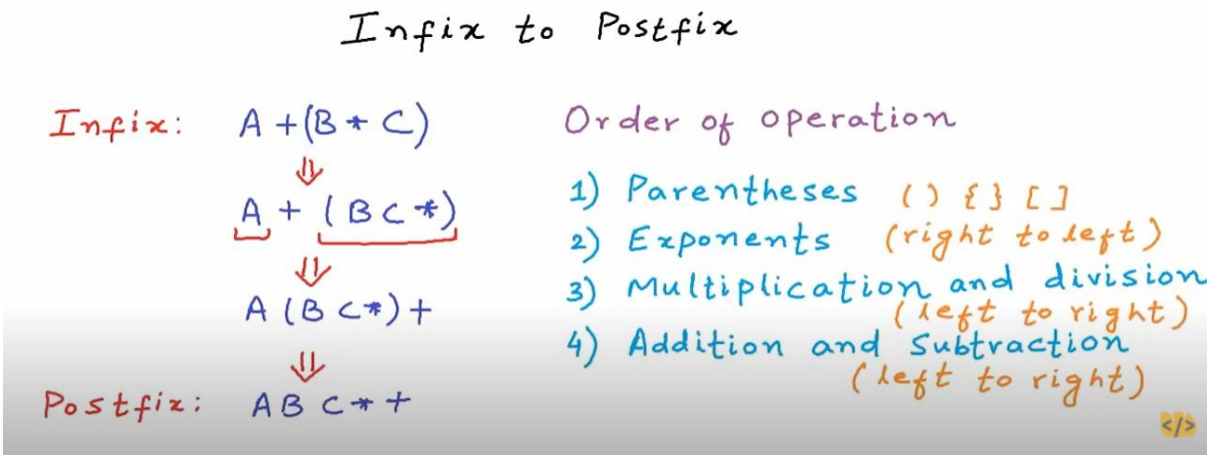
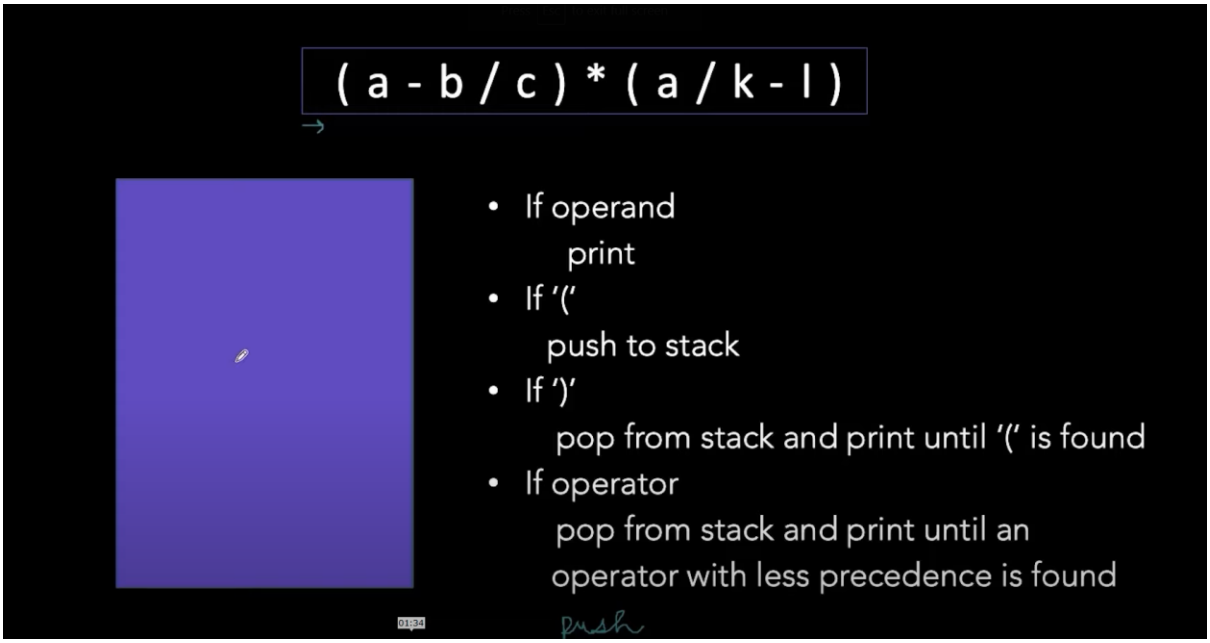
Infix to Postfix conversion using stack





Infix to Postfix

```
#include<iostream>
#include<string>
#include<stack>
using namespace std;
int precedence(char a)
{
   if(a=='^') return 3;
   else if(a=='/' || a=='*') return 2;
   else if(a=='+' || a=='-') return 1;
   return -1;
}
void infixToPostFixConversion(string str)
{
```

```
   stack<char> stk;
   string result="";
 for(int i=0;i<str.length();i++)
 {
    //operand
    if(str[i]>='a' && str[i]<='z' || str[i]>='A'&&str[i]<='Z' || str[i]>='0' && str[i]<='9')
    {
     result+=str[i];
    }else
    //(
    if(str[i]=='(')
    {
       stk.push(str[i]);
    }else
    // )
    if(str[i]==')')
    {
       while(!stk.empty() && stk.top()!='(')
       {
          result+=stk.top();
          stk.pop();
       }
       stk.pop();
    }else
    // operator
    {
       while(!stk.empty() && precedence(stk.top())>=precedence(str[i]))
    {
       result+=stk.top();
       stk.pop();
    }
      stk.push(str[i]);
    }

 }
 while(!stk.empty())
 {
    result+=stk.top();
    stk.pop();
 }
 cout<<"Result :"<<result;
}
int main()
{
   //string g="a+b*(c^d-e)^(f+g*h)-i";
   string g="(a-b/c)*(a/k-l)";
   infixToPostFixConversion(g);
   return 0;
}
```

Infix to Prefix

Sabse phele string ko reverse kiya
Frr '(' → ')' or ')' → '(' replace liya
Or postfix wale logic mai ek jagah change kiya highlighted hai
Or at the end waps string ko reverse kiya

```
#include<stack>
#include<algorithm>
using namespace std;
int precedence(char a)
{
   if(a=='^') return 3;
   else if(a=='/' || a=='*') return 2;
   else if(a=='+' || a=='-') return 1;
   return -1;
}
string infixToPostFixConversion(string str)
{
   stack<char> stk;
   string result="";
 for(int i=0;i<str.length();i++)
 {
    //operand
    if(str[i]>='a' && str[i]<='z' || str[i]>='A'&&str[i]<='Z' || str[i]>='0' && str[i]<='9')
    {
     result+=str[i];
    }else
    //(
    if(str[i]=='(')
    {
       stk.push(str[i]);
    }else
    // )
    if(str[i]==')')
    {
       while(!stk.empty() && stk.top()!='(')
       {
          result+=stk.top();
          stk.pop();
       }
       stk.pop();
    }else
    // operator
    {
       while(!stk.empty() && (precedence(stk.top())>precedence(str[i]) ||
precedence(stk.top())>=precedence('^')))
    {
       result+=stk.top();
       stk.pop();
```

```
    }
      stk.push(str[i]);
    }

 }
 while(!stk.empty())
 {
    result+=stk.top();
    stk.pop();
 }
 return result;
}

string infixToPrefixConversion(string str)
{
   reverse(str.begin(),str.end());
   for(int i=0;i<str.length();i++)
   {
      if(str[i]=='(') str[i]=')';
      else if(str[i]==')') str[i]='(';
   }
   string g=infixToPostFixConversion(str);
   reverse(g.begin(),g.end());
   return g;
}

int main()
{
   //string g="a+b*(c^d-e)^(f+g*h)-i";
   string g="x+y*z/w+u";
   cout<<infixToPrefixConversion(g);
   return 0;
}
```