Program:

```
#include <iostream>
#include <cstdlib>
#include <cstdio>
#include <cstring>
using namespace std;

class TreeN{
  public: char d;
  TreeN *l, *r;
  TreeN(char d) {
    this->d = d;
    this->l = NULL;
    this->r = NULL;
  }
};

class StackNod {
  public: TreeN *treeN;
  StackNod *n;
  StackNod(TreeN*treeN){
    this->treeN = treeN;
    n = NULL;
  }
};

class ExpressionTree {
  private: StackNod *top;
  public: ExpressionTree() {
    top = NULL;
  }
  void clear() {
    top = NULL;
  }

  void push(TreeN *ptr) {
    if (top == NULL)
      top = new StackNod(ptr);
    else {
      StackNod *nptr = new StackNod(ptr);
    nptr->n = top;
    top = nptr;
  }
}

TreeN *pop() {
  if (top == NULL) {
    cout<<"Underflow"<<endl;
  } else {
    TreeN *ptr = top->treeN;
    top = top->n;
    return ptr;
  }
}

TreeN *peek() {
  return top->treeN;
}

void insert(char val) {
  if (isDigit(val)) {
    TreeN *nptr = new TreeN(val);
    push(nptr);
  } else if (isOperator(val)) {
    TreeN *nptr = new TreeN(val);
    nptr->l = pop();
    nptr->r= pop();
    push(nptr);
  } else {
    cout<<"Invalid Expression"<<endl;
    return;
  }
}

bool isDigit(char ch) {
  return ch >= '0' && ch <= '9';
}

bool isOperator(char ch) {
  return ch == '+' || ch == '-' || ch == '*' || ch == '/';
}
```

```
int toDigit(char ch) {
  return ch - '0';
}

void buildTree(string eqn) {
  for (int i = eqn.length() - 1; i >= 0; i--)
    insert(eqn[i]);
}

void postfix() {
  postOrder(peek());
}

void postOrder(TreeN*ptr) {
  if (ptr != NULL) {
    postOrder(ptr->l);
    postOrder(ptr->r);
    cout<<ptr->d;
  }
}
void infix() {
  inOrder(peek());
}

void inOrder(TreeN *ptr) {
  if (ptr != NULL) {
    inOrder(ptr->l);
    cout<<ptr->d;
    inOrder(ptr->r);
  }
}
void prefix() {
  preOrder(peek());
}

void preOrder(TreeN *ptr) {
  if (ptr != NULL) {
    cout<<ptr->d;
    preOrder(ptr->l);
    preOrder(ptr->r);
    }
  }
};

int main() {
  string s;
  ExpressionTree et;
  cout<<"\nEnter equation in Prefix form: ";
  cin>>s;
  et.buildTree(s);
  cout<<"\nPrefix : ";
  et.prefix();
  cout<<"\n\nInfix : ";
  et.infix();
  cout<<"\n\nPostfix : ";
  et.postfix();
}
```

Output:

```
Enter equation in Prefix form: ++54*6984

Prefix : ++54*69

Infix : 5+4+6*9

Postfix : 54+69*+
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Process exited after 10.33 seconds with return value 0
Press any key to continue . . .
```