



PROGRAMMING
Homework Help

Family Tree

In Java

Family Tree in Java

This program is finding its parent grandparent and siblings. There are methods to find the grandchildren, most similar descendant, etc.

```
import java.util.ArrayList;
import java.util.List;

public class FamilyTree {
    Tree t;

    public FamilyTree(Tree t) {
        this.t = t;
    }

    public String getParent(Node person) {
        if (person.getParent() == null)
            return "No parent";
        return (String) person.getParent().getElement();
    }

    public String getGrandparent(Node person) {
        if (person.getParent() == null
            || person.getParent().getParent() == null)
            return "No grandparent";
        return (String) person.getParent().getParent().getElement();
    }

    public List<String> getChildren(Node person) {
        List<String> children = new ArrayList<String>();
        for (Node child : person.getChildren()) {
            children.add((String) child.getElement());
        }

        return children;
    }

    public List<String> getGrandchildren(Node person) {
        List<String> grandchildren = new ArrayList<String>();
        for (Node child : person.getChildren()) {
```

```

        grandchildren.addAll(getChildren(child));
    }

    return grandchildren;
}

public List<String> getSiblings(Node person) {
    List<String> siblings = new ArrayList<String>();

    if (person.getParent() == null)
        return siblings;

    for (Node sibling : person.getParent().getChildren()) {
        if (sibling != person)
            siblings.add((String) sibling.getElement());
    }

    return siblings;
}

public int getSimilarityScore(String a, String b) {
    int score = 0;
    int minLength = Math.min(a.length(), b.length());
    for (int i = 0; i < minLength; i++) {
        if (a.charAt(i) == b.charAt(i))
            score++;
        else
            break;
    }

    return score;
}

public String mostSimilarDescendant(Node person) {
    if (person.getChildren().isEmpty())
        return null;

    String mostSimilar = null;
    int mostSimilarScore = -1;

    for (String child : getChildren(person)) {
        int score = getSimilarityScore((String)
person.getElement(), child);
        if (score > mostSimilarScore) {
            mostSimilar = child;
            mostSimilarScore = score;
        }
    }

    for (String grandchild : getGrandchildren(person)) {
        int score = getSimilarityScore((String)
person.getElement(), grandchild);

```

```
    if (score > mostSimilarScore) {  
        mostSimilar = grandchild;  
        mostSimilarScore = score;  
    }  
}  
  
return mostSimilar;  
}  
}
```

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