

```
def pre(self, path=None, param=None, words=None):
    # 初始化
    if words is None: words=[]
    if path is None: path=[]
    if param is None: param=[]

    if self.left: # 左子树存在
        if isinstance(self.left[1], Node):
            self.left[1].pre(path+[-1], param+[self.index], words)
        else: # 访问到左叶子节点
            word=(self.left[1], param+[self.index], path+[-1])
            words.append(word)
    if self.right: # 右子树存在
        if isinstance(self.right[1], Node):
            self.right[1].pre(path+[1], param+[self.index], words)
        else: # 访问到右叶子节点
            word=(self.right[1], param+[self.index], path+[1])
            words.append(word)
    return words # 单词路径查找表  $\Gamma$ 
```
