

```
facts = ['a', 'b', 'c']
```

```
rules = {
```

```
    'd': ['a', 'b'],
```

```
    'e': ['d', 'c']
```

```
}
```

```
def backward(goal, visited=None):
```

```
    if visited is None:
```

```
        visited = set()
```

```
    if goal in visited:
```

```
        return False
```

```
    visited.add(goal)
```

```
    if goal in facts:
```

```
        return True
```

```
    if goal in rules:
```

```
        return all(backward(g, visited) for g in rules[goal])
```

```
    return False
```

```
# Test goals
```

```
for goal in ['f', 'd']:
```

```
    print(f"Expected output for the goal '{goal}':")
```

```
    if backward(goal):
```

```
        print(f"the goal '{goal}' can be achieved.\n")
```

```
    else:
```

```
        print(f"the goal '{goal}' cannot be achieved.\n")
```

Expected output for the goal 'f':  
the goal 'f' cannot be achieved.

Expected output for the goal 'd':  
the goal 'd' can be achieved.

=== Code Execution Successful ===