

1. Exercise 2.1 (from the book).

Say whether the following goals would succeed, and which variables, if any, would be instantiated to what values:

```
pilots(A,london) = pilots(london,paris).
```

```
point(X,Y,Z) = point(X1,Y1,Z1).
```

```
letter(C) = word(letter).
```

```
noun(alpha) = alpha.
```

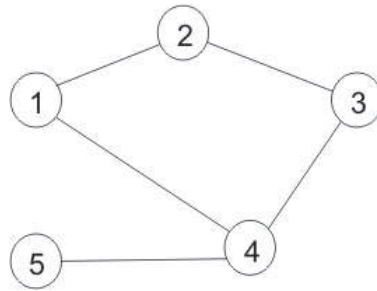
```
'vicar' = vicar.
```

```
f(X,X) = f(a,b).
```

```
f(X,a(b,c)) = f(Z,a(Z,c)).
```

2. A train network is a connected graph where nodes denote stations and edges are railway links. Two stations are safely connected iff there is a connection between A and B even if one of the other stations is not operational.

As an example consider the following train network:



```
station(1).
```

```
station(2).
```

```
station(3).
```

```
station(4).
```

```
station(5).
```

```
route(1,2).
```

```
route(2,3).
```

```
route(1,4).
```

```
route(4,3).
```

```
route(4,5).
```

Construct a logic program that can be used to determine pairs of safely connected train stations.

Hint: Use an auxiliary predicate `circumvent(X,Y,Z)` that holds if you can circumvent X when traveling from Y to Z.