

A **CSP** is specified by the following inputs:

**vars** A list of variables; each is atomic (e.g. int or string).

**domains** A dict of {var:[possible\_value, ...]} entries.

**neighbors** A dict of {var:[var,...]} that for each variable lists the other variables that participate in constraints.

**constraints** A function  $f(A, a, B, b)$  that returns true if neighbors A, B satisfy the constraint when they have values  $A=a, B=b$

```
def backtracking_search(csp,  
    select_unassigned_variable = first_unassigned_variable,  
    order_domain_values = unordered_domain_values,  
    inference = no_inference):
```

**Variable ordering** – first\_unassigned\_variable, mrv

**Value ordering** – unordered\_domain\_values, lcv

**Inference** – no\_inference, forward\_checking, mac

```
>>> backtracking_search(australia) is not None
```

```
True
```

```
>>> backtracking_search(australia, select_unassigned_variable=mrv) is not None
```

```
True
```

```
>>> backtracking_search(australia, order_domain_values=lcw) is not None
```

```
True
```

```
>>> backtracking_search(australia, select_unassigned_variable=mrv,  
                        order_domain_values=lcw) is not None
```

```
True
```

```
>>> backtracking_search(australia, inference=forward_checking) is not None
```

```
True
```

```
>>> backtracking_search(australia, inference=mac) is not None
```

```
True
```

```
>>> backtracking_search(usa, select_unassigned_variable=mrv,  
                        order_domain_values=lcw, inference=mac) is not None
```

```
True
```