**Chapter 3, End of Introduction to Section 2**

The form of quantification in FMSL is common to that of typed predicate logic. The general format of universal quantification is the following:

```
forall (x:t) predicate
```

This is read "for all values *x* of type *t*, *predicate* is true" where *x* must appear somewhere in *predicate*.

There are also two extended forms of `forall`, shown in Table 3.X.

| Extended Form | Reading | Equivalent To |
|---|---|---|
| `forall (x:t \| p1) p2` | For all *x* of type *t*, such that *p1* is true, *p2* is true. | `forall (x:t) if p1 then p2` |
| `forall (x in l) p` | For all *x* in *l*, *p* is true. | `forall (x:basetype(l)) if x in l then p` |

**Table 3.X: Extended forms of universal quantification**

Existential quantification has three comparable forms:

```
exists (x:t) predicate
exists (x:t | predicate1) predicate2
exists (x in l) predicate
```