

Phase 19 Demo : Finite Set Types

Example 1 : F (finite sets)

$F\ X$ denotes all finite subsets of X :

$[SongId, UserId]$

$| \quad songs : F\ SongId\ users : F\ UserId$

Example 2 : F1 (non - empty finite sets)

$F1\ X$ denotes all non-empty finite subsets of X :

$| \quad \frac{activeUsers : F_1\ UserId}{activeUsers \subseteq users}$

Example 3 : Combined with function types

Using F and $F1$ with partial functions:

$[PlaylistId, Playlist]$

$| \quad \frac{playlists : PlaylistId \rightarrow Playlist\ playlistOwner : PlaylistId \rightarrow UserId\ playlistSubscribers : PlaylistId \rightarrow F_1\ UserId}{\text{dom } playlistOwners \subseteq \text{dom } playlists \text{ dom } playlistSubscribers \subseteq \text{dom } playlists \forall i : \text{dom } playlistSubscribers(i) \subseteq \text{dom } playlistOwners(i)}}$

Example 4 : Comparison with P (power set)

$F\ X$ is a subset of $P\ X$ (all finite subsets are subsets):

$| \quad \frac{}{F\ users \subseteq P\ users \quad F_1\ users \subseteq F\ users}$