s? is for sender and r? is for receiver.

RequestFriend

$$\Delta UserManager$$
$$s? : User$$
$$r? : User$$

$$r? \notin UserFriends\, s?$$
$$UserFriendStatus' = UserFriendStatus \cup \{s?, r?\} \mapsto RequestSent$$
$$UserFriendStatus' = UserFriendStatus \cup \{r?, s?\} \mapsto RequestReceived$$
$$UserFriends'\, s? = UserFriends\, s? \cup \{r?\}$$
$$UserFriends'\, r? = UserFriends\, s? \cup \{s?\}$$

FriendResponse

$$\Delta UserManager$$
$$s? : User$$
$$r? : User$$
$$response? : Bool$$

$$UserFriendStatus\{r?, s?\} = RequestReceived$$
$$(response? = True \land$$
$$\quad UserFriendStatus'\, \{r?, s?\} \mapsto confirmed \land$$
$$\quad UserFriendStatus'\, \{r?, s?\} \mapsto confirmed)$$
$$\lor (UserFriendStatus'\, \{r?, s?\} \mapsto \varnothing \land$$
$$\quad UserFriendStatus'\, \{r?, s?\} \mapsto \varnothing \land$$
$$\quad UserFriends'\, s? = UserFriends\, s? \setminus \{r?\} \land$$
$$\quad USerFriends'\, r? = UserFriends\, r? \setminus \{s?\})$$

RequestRendezvous

$$\Delta UserManager$$
$$\Delta ParcelManager$$
$$s? : User$$
$$r? : User$$
$$p? : Parcel$$

$$UserFriendStatus\{r?, s?\} \mapsto confirmed$$
$$p? \in UserParcels\, s?$$
$$NOTSUREWHATTODOHERE$$

$$
\begin{array}{|l}
\hline
RendezvousResponse \\
\Delta UserManager \\
\Delta ParcelManager \\
s? : User \\
r? : User \\
p? : Parcel \\
\hline
UserFriendStatus\{r?, s?\} \mapsto confirmed \\
p? \in UserParcels\, s? \\
NOTSUREWHATTODOHERE \\
\hline
\end{array}
$$

$$
\begin{array}{|l}
\hline
FinalizeExchange \\
\Delta UserManager \\
\Delta ParcelManager \\
s? : User \\
r? : User \\
p? : Parcel \\
\hline
UserFriendStatus\{r?, s?\} \mapsto confirmed \\
p? \in UserParcels\, s? \\
UserParcels'\, s? = UserParcels\, s? \setminus \{p?\} \\
UserParcels'\, r? = UserParcels\, r? \cup \{p?\} \\
(ParcelDestination\, p? = r? \\
\quad \land\ ParcelStatus'\, p? \mapsto completed) \\
\lor\ ParcelStatus'\, p \mapsto WithCourier \\
\hline
\end{array}
$$

initiateCourier(pID) -¿ uID A sends a parcel (status=0) to B. pID is added to B.parcels. Returns uID of closest mutual friend. A must then call uID-¿requestRendezvous(pID)

isFriendWith(uID) -¿ bool Sent from A to B. Return true if uID is a member of B.friends

isRatable(uID) -¿ bool Called on self. Looks up uID in ratable. True if exists.

rate(bool) true: A calls on B. Remove first instance of B.id from A.ratable. Increment B.rating false: A calls on B. Remove first instance of B.id from A.ratable. Decrement B.rating