







```
CLASS ParticipantGenerator
```

```
    DEFINE initialize ParticipantGenerator(party)
```

```
        party = party
```

```
        type = randNum(0, 1)
```

```
    ENDDDEF
```

```
    DEFINE run()
```

```
        n = 100 // any positive number
```

```
        WHILE n > 0 DO
```

```
            IF type == 0 THEN
```

```
                participant = new Superhero()
```

```
            ELSE
```

```
                participant = new Sidekick()
```

```
            ENDIF
```

```
            party.enter(participant)
```

```
            party.leave(participant)
```

```
            n--
```

```
        ENDWHILE
```

```
    ENDDDEF
```

```
ENDCLASS
```

```
CLASS Party
```

```
    DEFINE initialize Party()
```

```
        sidekicks = new ArrayBlockingQueue()
```

```
    ENDDDEF
```

```
    DEFINE arrive(participant)
```

```
        IF participant == Superhero THEN
```

```
            PRINTLN "Superhero", participant.id, "arrives"
```

```
        ELSE
```

```
            PRINTLN "Sidekick", participant.id, "arrives"
```

```
            sidekicks.add(participant)
```

```
        ENDIF
```

```
    ENDDDEF
```

```
    DEFINE leave(participant)
```

```
        IF participant == Superhero THEN
```

```

    superhero = participant
    WHILE true DO
        sidekick = sidekicks.take()
        IF superhero.invite(sidekick) THEN
            EXIT
        ELSE
            sidekicks.add(sidekick)
        ENDIF
    DONE
    PRINTLN "Superhero", superhero.id, "exits party"
ELSE
    sidekick = participant
    WHILE NOT sidekick.accept() DO
    ENDWHILE

    PRINTLN "Sidekick", sidekick.id, "exits party"
ENDIF
ENDDEF

ENDCLASS

CLASS Superhero

    DEFINE initialize Superhero()
        id = random_unused_integer
        accepted = false
        waiting = false
        PRINTLN "Superhero", id, "created"
    ENDDDEF

    DEFINE invite(sidekick)
        EXC_ACC
        waiting = true
        PRINTLN "Superhero", id, "invites Sidekick", sidekick.id
        sidekick.receive(onAccept)
        WHILE waiting DO
            WAIT()
        ENDWHILE
        return accepted
    END_EXC_ACC
ENDDEF

```

```

DEFINE onAccept(yes)
    EXC_ACC
        waiting = false
        accepted = yes
        NOTIFY()
    END_EXC_ACC
ENDDEF

ENDCLASS

CLASS Sidekick

    DEFINE initialize Sidekick()
        id = random_unused_integer
        invitation = NULL
        PRINTLN "Sidekick", id, "created"
    ENDEF

    DEFINE receive(onAccept)
        EXC_ACC
            invitation = onAccept
            NOTIFY()
        END_EXC_ACC
    ENDEF

    DEFINE accept()
        EXC_ACC
            WHILE invitation==NULL DO
                WAIT()
            ENDWHILE
            yes = randNum(0,1)
            invitation.accept(yes)
            invitation = NULL
            return yes
        END_EXC_ACC
    ENDEF

ENDCLASS

```