# Documents For Design

There are total 3 files in my project.

**StartBoat MissionaryBoat CannibalBoat**

And each of them stands for a class with corresponding names.

StartBoat is the resource and controls two synchronized function

cannibalArrive(**int** id) and

missionaryArrive(**int** id)

For these two functions

**final** Lock lock = **new** ReentrantLock();

**final** Condition m = lock.newCondition();

**final** Condition c = lock.newCondition();

is used to synchronize the processing.

I set the

lock.lock();

and then lock.unlock();

CannibalBoat and MissionaryBoat are the two classes implementing Runnable. The parsed ID and StartBoat will be passed as the parameters. cannibalArrive(**int** id) and missionaryArrive(**int** id) will be run in the run() function.

CannibalBoat(**int** id, StartBoat can\_mis)

MissionaryBoat(**int** id,StartBoat can\_mis)

The biggest challenge in the coding is how to set the maximum number of cannibals and missionaries in the current round. Our idea is that only these 3 situations will happen:

3 Cannibals

2 Missionaries and 1 Cannibal

3 Missionaries

Thus, we believe that after making all triple pair of cannibals, the ratio between missionaries and cannibals should be bigger than 2:1.

**if** (mOnBoat - 3 > 2 \* (cOnBoat % 3))

The we can take 3 missionaries as the maximum, else we can only take 2.

**if** (mOnBoat - 3 > 2 \* (cOnBoat % 3)) {

mBoatMax = 3;

} **else** {

mBoatMax = 2;

}

cBoatMax = 1;