**Semiphores** ( [] is used when the semaphores are in an array to denote each doctors office). All semiphores are created at zero, but increase as different threads are created

enteredPatient keeps track of patients that enter the office. Starts at 0.

availableReceptionest keeps track of working receptionests. Initialized as zero until the receptionist is created.

waitingPatient[] keeps track of patients in the waiting room that are destined to each doctors office. Starts as zero, but increases as patients file into the waiting room

nurseNotified[] keeps track of if the nurse has been notified of a patient

availableNurse[] keeps track of the availability of each nurse. Initialized to how many doctors are.

officeDirection[] keeps track of if the nurse directed the patient to the office. Initialized at zero

officePatient[] keeps track of the patients that are waiting in a doctors office. Initialized as zero, but increases as patients file in

doctorNotified[] keeps track of the doctor being notified. Initialized as zero until doctors are notified they have patients

availableDoctor[] keeps track of if the doctor is busy. Initialized to how many doctors are available

symptomListen[] keeps track of if the patient has given the symptom to the doctor. Initialized as zero

doctorAdvice[] Keeps track of if the doctor has given the advice to the patient

patientLeaves[] keeps track if the patient has left

The clinic to be simulated has doctors, each of which has their own nurse. Each doctor has an office of his or her own in which to visit patients. Patients will enter the clinic to see a doctor, which should be randomly assigned. Initially, a patient enters the waiting room and waits to register with the receptionist. Once registered, the patient sits in the waiting room until the nurse calls. The receptionist lets the nurse know a patient is waiting. The nurse directs the patient to the doctor’s office and tells the doctor that a patient is waiting. The doctor visits the patient and listens to the patient’s symptoms. The doctor advises the patient on the action to take. The patient then leaves

Receptionest

Receptionist is ready waits to accept next patient

Release availableReceptionest

Receptionist registers next patient

Acquire enteredPatient

Print register patient

Randomly assign a doctor number to patient

Lets nurse know patient is waiting

Release nurseNotified(doctorID)

Patient

Arrives at clinic

Release enteredPatient

Waits for receptionist to register

Acquire availableReceptionest

Registers with receptionist

Store doctorNumber

Waits for nurse to call

Release waitingPatient[doctorNumber]

Acquire availableNurse

Patient goes to doctor’s office

Acquire officeDirection

Release officePatient

Patient waits for doctor

Acquire availableDoctor

Tells doctor of symptoms

Release symptomListen

Gets advice from doctor

Acquire doctorAdvice

Leaves office

Release patientLeaves

Nurse

Nurse is ready to take next patient

Release availableNurse

Waits for receptionist to tell that a patient is ready

Acquire nurseNotified

Directs patient to doctor’s office

Release officeDirection

Informs doctor of waiting patient

Release notifiedDoctor

Doctor

Doctor available

Release availableDoctor

Waits for nurse to inform of waiting patient

Acquire notifiedDoctor

Doctor visits patient and listens to symptoms

Acquire officePatient

Acquire symptomListen

Doctor advises patient on action

Release doctorAdvice

Doctor releases patient

Acquire patientLeaves