Phase 1

Task 1:

At first we have created a private Threadedqueue in Kthread class to store Kthreads that have called join() on that particular Kthread.Lets say current Kthread has called join() on X Thread. Then in join() method intterupt will be disbaled.Current Kthread woill be added to threadqueue of X Kthread and Current Kthread will go to sleep. When X Kthread will call finish() method, inside this method ready() method will be called on all members of threadqueue of X Kthread.

Task 2:

A linkedList has been created in Condition2 class.upon sleep() method call, current thread will be added to the LinkedList,release the lock , go to sleep and after waking up want to acquire the lock. When wake() method is called on the variable,ready() method will be called on first member of the LinkedList.in case wakeall(),ready() method will be called on all members of the LinkedList.

Task 3:

A new private class sleeper has been created inside Alarm class. It has two variables: Kthread t and long wake_time. A Comparator class is also added. An additional priority queue of sleeper class objects is declared in Alarm class.When wakeUntill is called, new sleeper object is created with the Kthread and its wakeup time.then the object is added to the priority queue and the Kthread calls sleep(). When the timer_interrupt() is invoked, it checks whther the priority queue is empty.if not, it moves all the Kthreads associated with elements of that queue from blocked state to ready state.at last it forces the current Kthread to yield.

Task 4:

A new private class word is created. It has three variables: a string that stores the name of the Kthread, a Condition2 variable and a integer that stores the message. Two LinkedList is created inside Communicator class: one for listeners and one for speakers.additionally, a Lock variable is also created. Every Kthread creates a object of word class when it has no appropriate member to communicate
when speak() is called, the Kthread checks whether the listener list is empty. If not, it removes first object from the list and send the message to the Kthread associated with it,retrieves its condition2 variable and call wake method on it. If the list is empty then the Kthread creates a object of word class and calls sleep on the condition2 variable of that object. When listen() is called similar procedure.

Phase 2

Task 1: