1. **Prepositions**
    - Let patientArrived denote “a patient has arrived at the clinic”
    - Let atRisk denote “a patient is at risk”
    - Let hasMedicalCondition denote “a patient has a medical condition”
    - Let hasAllergy denote “a patient has an allergy”
    - Let appointmentBooked denote “an appointment has been booked with a clinician”
    - Let requestForPatientReport denote “patient data is requested”
    - Let requestForManagementReport denote “management data is requested”
    - Let replyWithManagementReport denote “management data is replied”
    - Let recordCreated denote “a record exists”
    - Let canCreateRecord denote “a record can be created”
    - Let canEditRecord denote “a record can be edited”
    - Let canViewRecord denote “a record can be viewed
    - Let isWorking denote “subject is working”
    - Let displayWarning denote “error on screen”
    - Let isClinician denote “a clinician staff member at the clinic”

    Sets
    - Let Patient denote the set of patients
    - Let Clinician denote the clinicians
    - Let WalkIn denote the set of walk-ins
    - Let Username denote the set of clinic staff usernames
    - Let Password denote the set of clinic staff passwords

    Predicates
    - Let Available: Clinician be a predicate such that Available(c) denotes that “Clinician c is available”
    - Let Allocated: Clinician X Appointment be a predicate such that Allocated (c, a) denotes that “clinician c is allocated to appointment a”
    - Let isBeingseen: Patient X Clinician be a predicate such isBeingSeen(p, c) denotes that “patient p is being seen by clinician c”
    - Let Valid: Username X Password be a predicate such that Valid (u, p) denotes that “the username and password pair (u, p) is valid”
    - Let AccessPatientInfo: Clinician be a predicate such that AccessPatientInfo(c) denotes that “clinician c has access to patient information”

2. A) atRisk $\leftrightarrow$ (hasMedicalCondition $\vee$ hasAllergy)
   B) $\neg$requestForPatientReport $\rightarrow$ displayWarning
   C) recordCreated $\rightarrow$ (canViewRecord $\wedge$ canEditRecord)
   D) (isClinician $\wedge$ isWorking) $\rightarrow$ (canCreateRecord $\vee$ canEditRecord $\vee$ canViewRecord)

3. E) $\forall p \in$ Patient: $\exists c \in$ Clinician
   F) $\neg \forall p \in$ Patient: atRisk $\wedge$ ($\neg$hasMedicalCondition $\vee$ $\neg$hasAllergy)

G) ∀c∈ Clinician: ∃a_1∈ Appointment: Allocated (c; a_1) ∧ ∀a_2∈ Appointment: Allocated (c, a_2) → r1 = r2

H) ∀w∈ WalkIn: ∃c∈ Clinician: Available(c)

4. **NOTE**: using Ц as "until" symbol

   I) atRisk Ц (hasMedicalCondition V hasAllergy)

   J) □ (patientArrived ∧ appointmentBooked → ◇ isBeingSeen)

   K) ∀c∈ Clinician: ∃u∈ Username, p∈ Password: hasUsername(c, u) ∧ Valid(u, p) → ○ AccessPatientInfo(c)

   L) □ ◇ requestForManagementReport → □ ◇ replyWithManagementReport

5.

Mode	**Conditions**	
Created	NOT HasAllergy AND NOT HasCondition	HasAllergy OR HasCondition
NotCreated	true	false
PatientState	**Regular**	**AtRisk**