Z Notation for Job Portal System

# Basic Types

[USER\_ID, JOB\_ID, COMPANY\_ID, APPLICATION\_ID, INTERVIEW\_ID]

# User Roles and Application Status

ROLE ::= jobseeker | employer | admin  
STATUS ::= submitted | withdrawn | accepted | rejected

# User Information

User  
 users : USER\_ID → ROLE  
 registered : set of USER\_ID

∀ u : USER\_ID • u ∈ registered ⇔ u ∈ dom users

# Job Information

Job  
 jobs : JOB\_ID → USER\_ID  
 openJobs : set of JOB\_ID

# Applications

Application  
 applications : APPLICATION\_ID → (USER\_ID × JOB\_ID × STATUS)

∀ a : APPLICATION\_ID • applications a = (applicant a, appliedJob a, submitted)

# Interviews

Interview  
 interviews : INTERVIEW\_ID → (APPLICATION\_ID × USER\_ID)

∀ i : INTERVIEW\_ID • interviews i = (a, e) ⇒ a ∈ dom applications ∧ e ∈ dom users

# System Start

InitSystem  
 users = {}  
 registered = {}  
 jobs = {}  
 openJobs = {}  
 applications = {}  
 interviews = {}

# Registering a New User

RegisterUser  
 Δ User  
 newUser? : USER\_ID  
 role? : ROLE  
 password? : STRING  
 profile? : STRING

# Posting a Job

PostJob  
 Inputs: employer, jobId  
 Precondition: employer is registered as employer, jobId is new  
 Effect: Add jobId to jobs and openJobs

# Applying for a Job

ApplyJob  
 Inputs: seeker, jobId, appId  
 Precondition: seeker is jobseeker, jobId exists  
 Effect: Add appId to applications

# Scheduling an Interview

ScheduleInterview  
 Inputs: appId, employer, intId  
 Precondition: appId and employer are valid  
 Effect: Add intId to interviews

empId? ∈ dom users ∧ users empId? = employer  
 appId? ∈ dom applications  
 intId? ∉ dom interviews