OCL CONSTRAINS This document defines the Object Constraint Language (OCL) constraints for the **bite bright** system. These constraints enforce critical business rules and ensure data integrity across the system's domain model. The constraints are grouped by class and include validations for input values, relationships, and system-wide rules.

**Class: User**

1. **Age must be greater than 10 years:**

context User

inv: self.age > 10

1. **Email must be unique across all users**:

context User

inv: User.allInstances()->isUnique(email)

1. **Height and weight must be positive values**:

context User

inv: self.height > 0 and self.weight > 0

1. **Emotional status must be a non-empty string**:

context User

inv: not self.emotionalStatus.oclIsUndefined() and self.emotionalStatus.size() > 0

1. **Password must be at least 8 characters long**:

context User

inv: self.password.size() >= 8

**Class: Meal**

1. **Meal type must belong to a predefined set (e.g., breakfast, lunch, dinner, snack)**:

context Meal

inv: self.type = 'breakfast' or self.type = 'lunch' or self.type = 'dinner' or self.type = 'snack'

1. **Nutrients string must not be empty**:

context Meal

inv: not self.nutrients.oclIsUndefined() and self.nutrients.size() > 0

**Class: Goal**

1. **Target description must be non-empty**:

context Goal

inv: not self.target.oclIsUndefined() and self.target.size() > 0

1. **End date must not be in the past**:

context Goal

inv: self.endDate >= DateTime::now()

1. **A user can only have one active goal at a time**:

context User

inv: self.goals->select(g | g.endDate >= DateTime::now())->size() <= 1

**Class: Report**

1. **Summary must not exceed 500 characters**:

context Report

inv: self.summary.size() <= 500

1. **Report must be linked to an existing HIS entry**:

context Report

inv: not self.his.oclIsUndefined()

**Class: HIS**

1. **Recommendations must not exceed 1000 characters**:

context HIS

inv: self.recommendations.size() <= 1000

1. **A user must be linked to at least one HIS record**:

context User

inv: self.his->size() >= 1

1. **Feedback and recommendations cannot be empty if present**:

context HIS

inv: not self.feedback.oclIsUndefined() implies self.feedback.size() > 0

inv: not self.recommendations.oclIsUndefined() implies self.recommendations.size() > 0

1. **Wearable data, if present, must follow a defined format** (e.g., not empty):

context HIS

inv: not self.wearableData.oclIsUndefined() implies self.wearableData.size() > 0