2025

Vacation Tracking System - VTS

DOCUMENTATION

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Vision

Providing individual employees, the ability to manage their own vacation time, sick leave and personal time off without knowledge in company policy.

Actors of the scene

We have four actors in the scene:

1- **Employee**: The main user of the system. Uses the system to manage his/her vacation time.

2- **Manager**: Employee who has all the abilities and goal of a regular employee, but can also approve or reject vacation requests for his immediate employees. He may also award his direct employees a personal leave time, according to certain limits which been set in the system.

3- **HR Clerk**: Member of the HR department who has rights to view employee's personal data and responsible for ensuring that employee's information in all HR systems is up to data and correct. He can add or remove any record in the system. (HR Clerks may or may not be employees) if they are employees, they use two separate login IDs to manage these two different roles (also mentioned in the functional requirements).

4- **System Admin**: He is responsible for the smooth running of the system's technical resources (web server and the database) and collects and archive all log files. (responsible for the infrastructure but he is also an employee).

Functional Requirements

- Rule based system for validating and verifying vacation requests.
- Manager (if exists) should be able to approve employee's requests.
- Employee should be able to access his previous vacations (for 6 months).
- Employee should be able to make requests for the future 18 months.
- Employee should be able to track his request status (approved, rejected, pending, canceled, withdrawn).
- Employee can withdraw request if not approved and cancel it if approved.
- Employee should be able to access a visual calendar to select his vacation dates.
- The system should use email notification service to:
    - Employee should get an email notification once the request status changed.

    - Manager gets an email notification once his direct employee made a request.
- Manager should be able to directly award person leave time (according to the system limits).
- HR and system admin should be able to override all actions restricted by roles (these overrides should be logged).
- The system should keep activity logs for all made transactions.
- The system should provide web service to search for any employee's vacation request summary.
- Integrate with the HR department legacy systems to retrieve required employee's information.
- The system should use a single-sign-on mechanism for all actors authentications.

Non – Functional Requirements

- **Usability**: The system must be easy to use giving the user a smooth and simple experience.
- **Scalability**: The system should have the ability to scale and add new features and integrate with systems related to the facility.

- **Secured**: giving it will be an extension for the company's existing software (this means the data should be highly secured).

Constraints

- The system uses the company existing hardware and middleware.
- The system is extension to the existing intranet portal system.
- The system uses the portal's single-sign-on mechanism for all authentications.
- All system transactions are saved in the system logs.

Business Requirements

- All employees work eight hours a day.
- Each employee's vacation time requests are subject to the restrictions of each employee's primary work location in addition to overall company policies and restrictions.

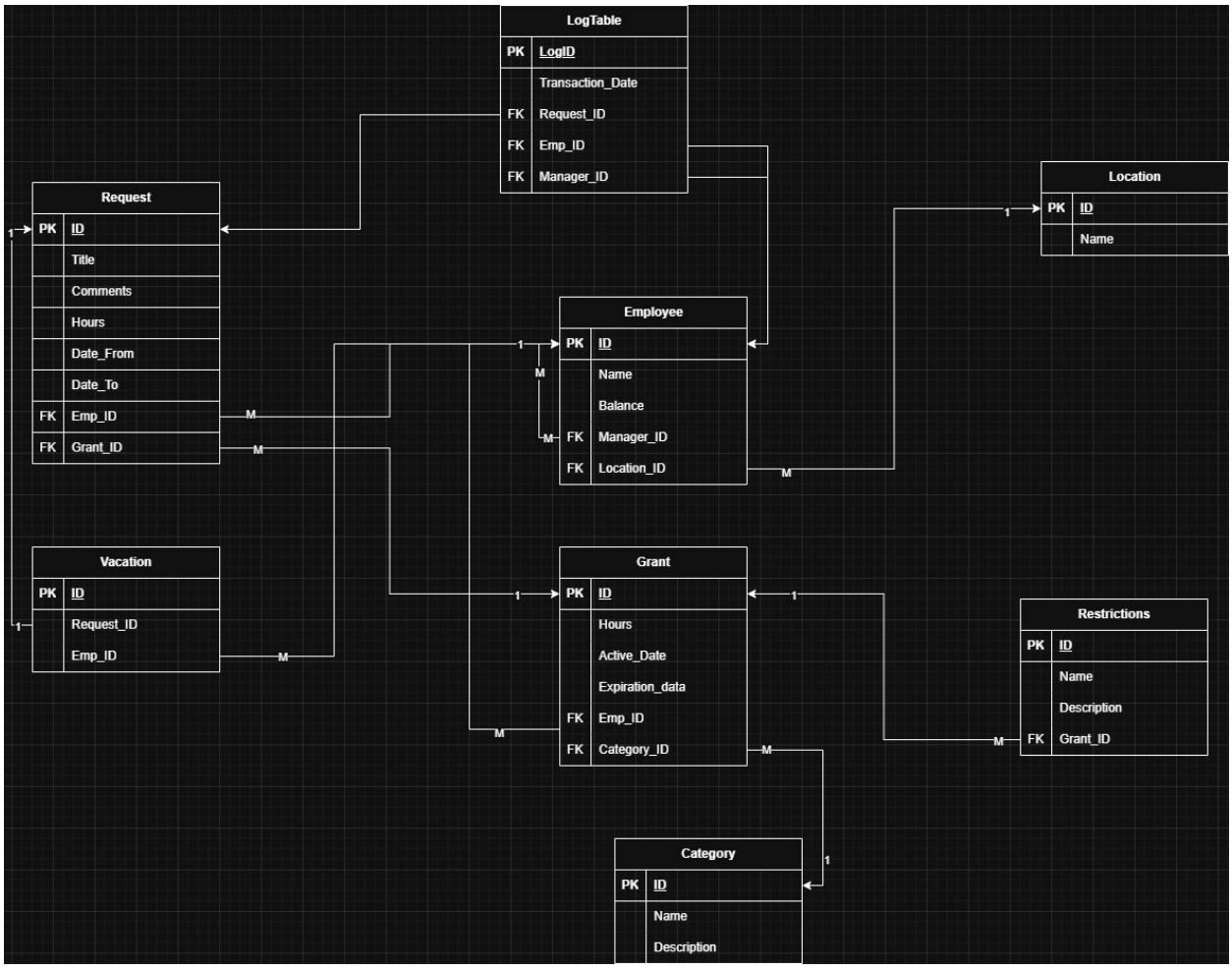
- Vacation requests validation rules are defined and owned by the HR department.
- An employee can't take more than x consecutive days of leave for Y type of grant.
- Vacation time of type X cannot be taken when directly adjacent to a company or location – specific holiday.
- Vacation time may not be granted when there is only x number of employees scheduled to work from a predefined list of Y employees (there is short of employees count).
- Vacation time may not be granted on specific dates.
- Vacation time of a certain type is limited to certain days of the week.

Note: All specific constraints are in the company policy maintained by the HR department.

Assumptions

- The company's existing software is scalable and have the ability to integrate with new made extensions.
- The company's infrastructure is sufficient and supports our needs.

Data Model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Transaction_Date
FK Request_ID
FK Emp_ID
FK Manager_ID
Request
PK ID
Title
Comments
Hours
Date_From
Date_To
FK Emp_ID
FK Grant_ID
Location
PK ID
Name
Employee
PK ID
Name
Balance
FK Manager_ID
FK Location_ID
Vacation
PK ID
Request_ID
Emp_ID
Grant
PK ID
Hours
Active_Date
Expiration_data
FK Emp_ID
FK Category_ID
Restrictions
PK ID
Name
Description
FK Grant_ID
Category
PK ID
Name
Description
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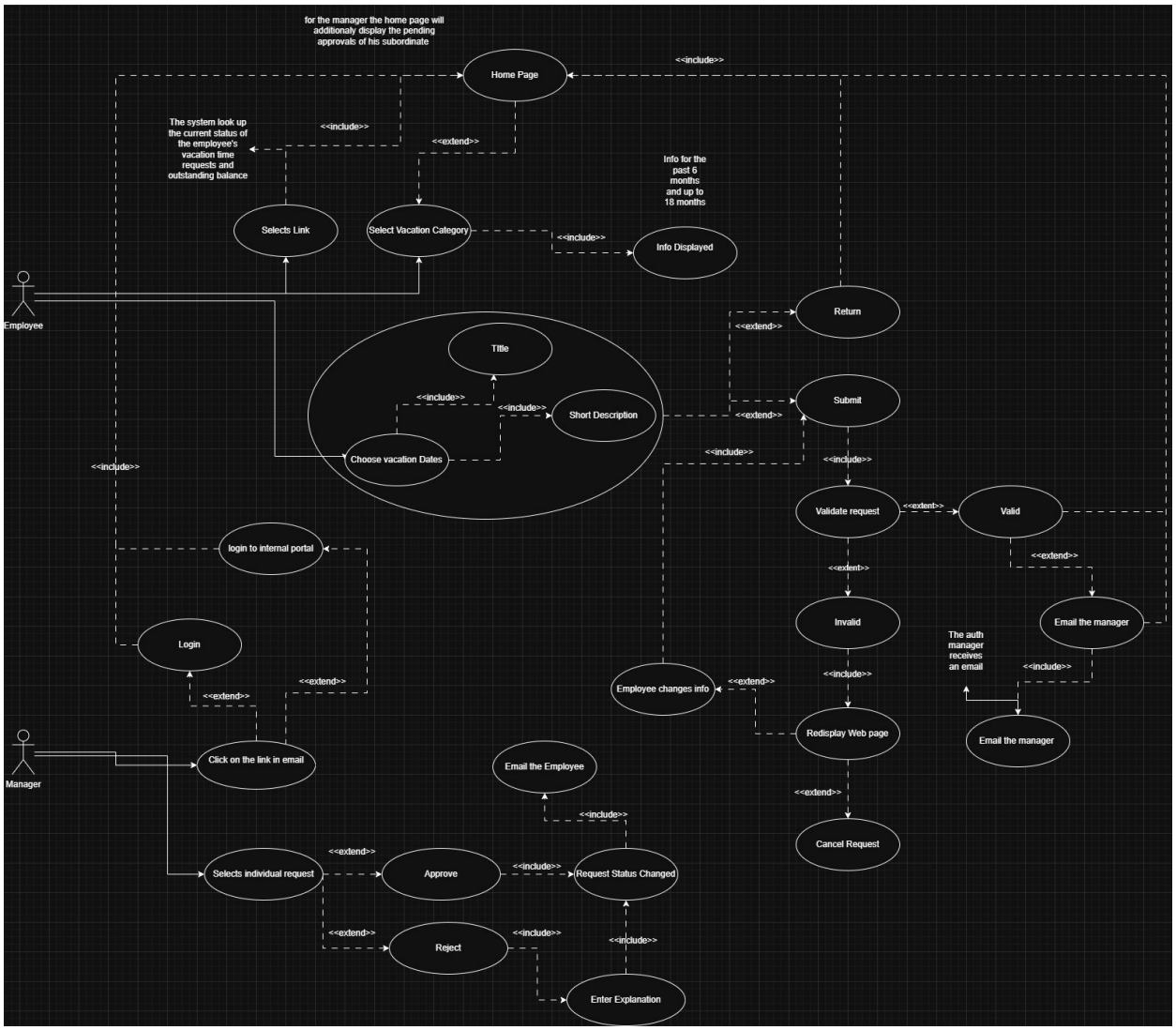
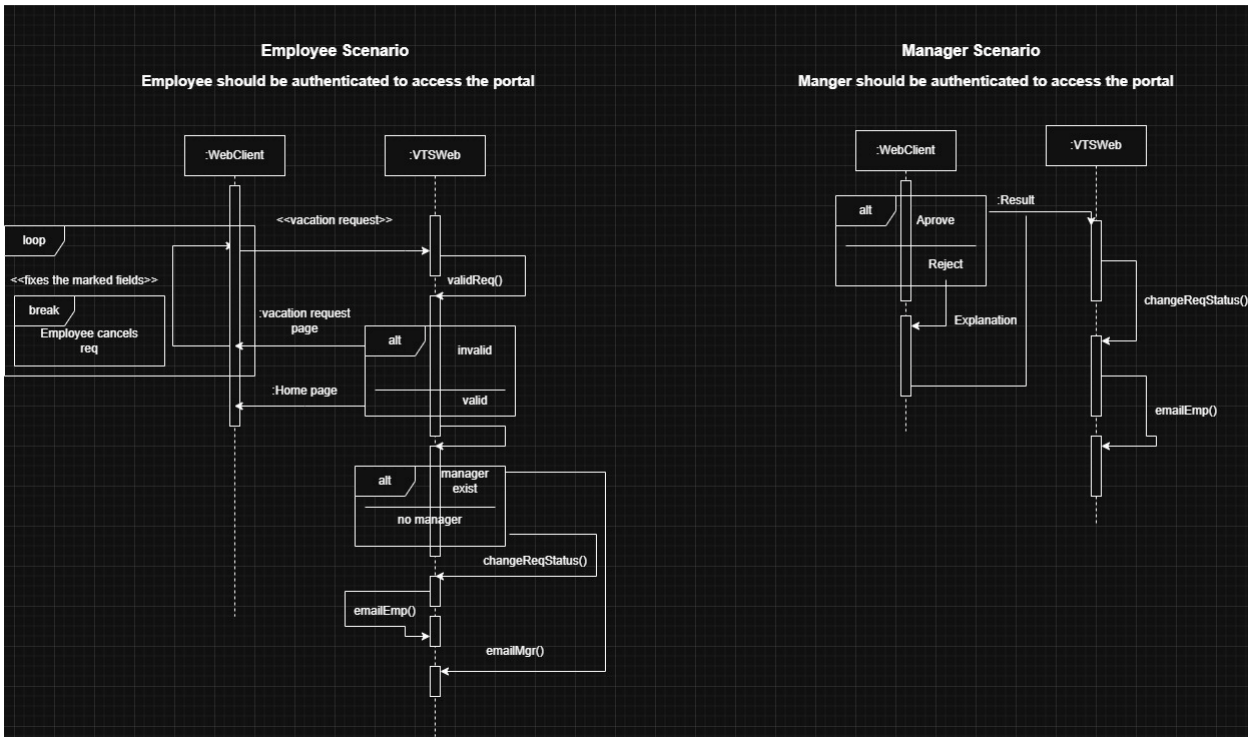
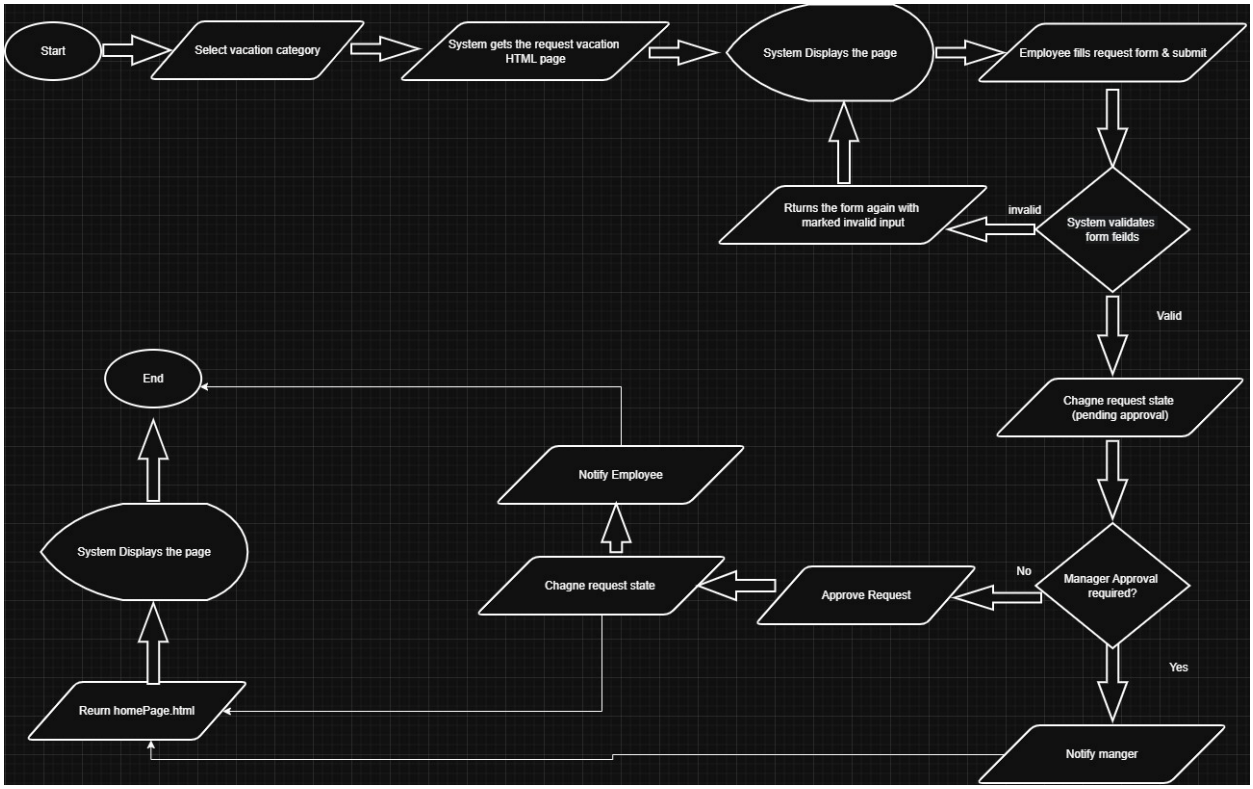
Use Case Diagram



Sequence Diagram



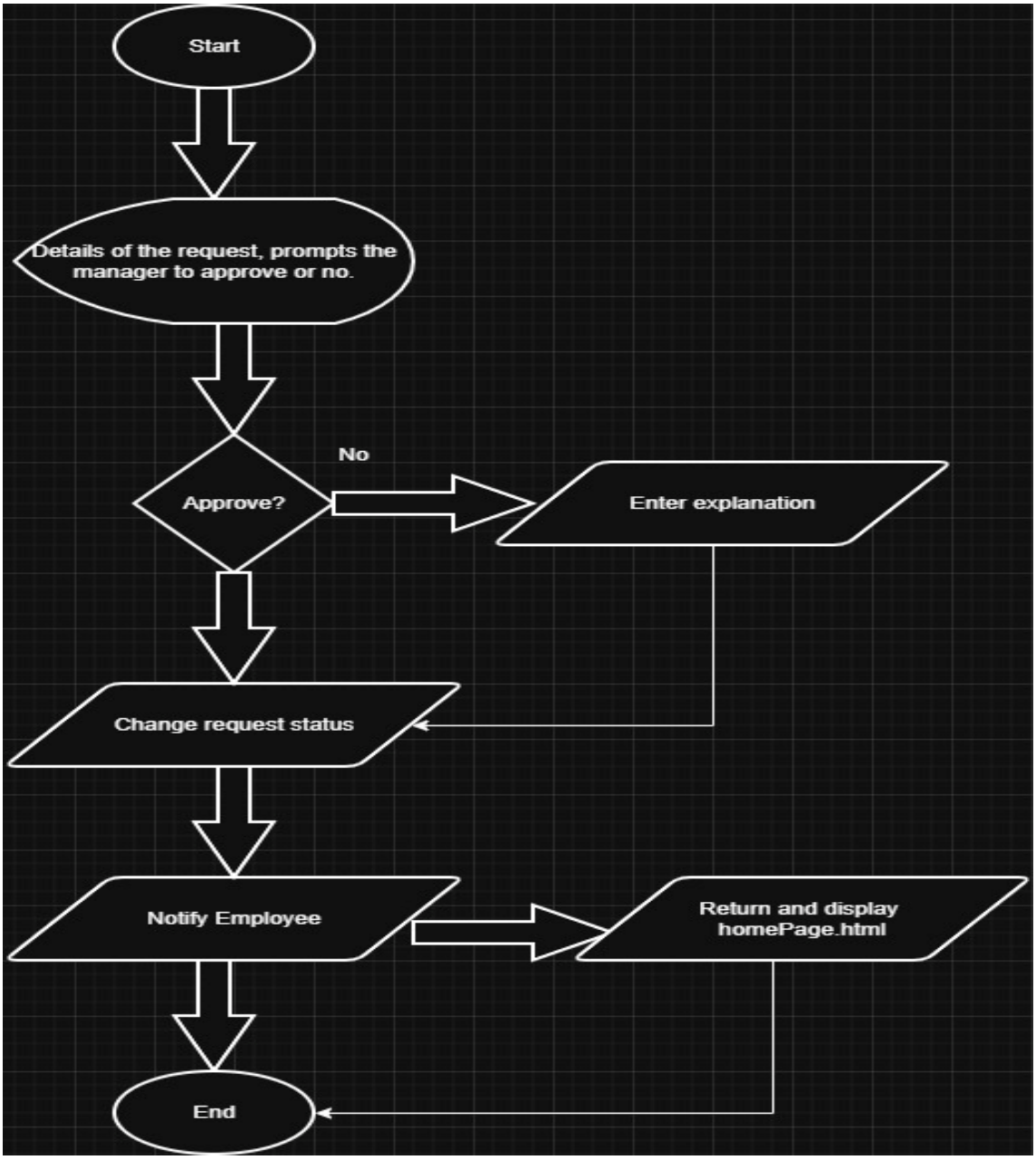
Create New Request (Flowchart)



Preconditions:

1. The employee should be authenticated by the portal and have the privileges to manage his / her own vacation time.
2. System already returned and displayed the home page.

Manager Handles Employee Request



Preconditions:

- The manger received an email about a new request and clicked the embedded link in the email.

- The manager is authenticated by the portal to manage his personals requests.
- The VTS displayed the separate section listing requests pending approval.
- The manager selected individual request.

Pseudocode For New Request Scenario

```
BEGIN
        EMPLOYEE SELECTS “link to the VTS”

        PROCESS “using employee credentials to look up the current status of all
        His vacation time requests and outstanding balances.”

        DISPLAY “retrieved information for the past 6 months and for 18 months –
        In the future”

        PROMPT “Select one of the vacation categories”

        DISPLAY “visual calendar to select vacation date and time”

        PROMPT “select the desired dates and hours per date, short title and -
        description”
        SUBMIT
        GET “form data”

        PROCESS “validate form data”

        IF “form data” is NOT valid THEN
                LOOP
                        PROCESS “return the web page to the employee with errors
                        Highlighted and documented”
                        IF “employee canceled request” THEN
                                PROCESS “return employee to the VTS main page”
                                BREAK
                                ENDIF, END
                        PROMPT “employee inputs the correct data and submits”
```

```
                ENDLOOP


        ELSE
                PROCESS “return employee to the main VTS page”
        ENDIF

        IF “request requires manager approval” THEN
                PROCESS “send email to the authorized manger”
                GET RequestState
        ELSE
                PROCESS “approve the request”
                GET RequestState
        ENDIF

        IF RequestState = “Approved” THEN
                PROCESS “change request state to approved”
        ELSE
                PROCESS “change request state to pending approval”
        ENDIF

        PROCESS “email the employee with the request state”

        PROCESS “acting with the DB”

END
```

Pseudocode For New Request Approval Scenario

Preconditions: The manager received the email end respond to it and he is authorized by the portal.

```
BEGIN
        PROMPT “manger selects individual pending request”
        PROMPT “manager approve or disapprove the request”

        IF request NOT approved THEN
                PROMPT “inputs an explanation”
                PROCESS “change request status to disapproved”
        ENDIF
        PROCESS “return employee to the main VTS page”
        PROCESS “change request status to approved”
        PROCESS “email the employee with the new request status”
END
```