

**Problem Definition:** In any organization, onboarding a new vendor or making payments to a vendor goes from a different approval process at different levels. We want you to solve this business problem. Your solution should allow users to configure the workflow and save it into Database. For each action taken by an individual user at all levels should be logged into the Database. Finally, we will have a result of approval workflow as Active, Terminated or Executed. The approval workflow has mainly four components: Users, Approval Actions, Type of Approvals and Approval Levels.

**Definition of final results:**

Active: Workflow is active and somebody is required to approve at any level

Terminated: Workflow was terminated as one of the approvers has Rejected the approval

Executed: All users have approved

**Technologies to be used:** Node.js, MongoDB and any other if you prefer

**List of Users who can be the part of approval matrix**

1. Elsa Ingram
2. Paul Marsh
3. D Joshi
4. Nick Holden
5. John

**Approval Actions:**

1. Approve: This action will be marked as approved and the workflow will be active so that the next person in the approval workflow can take the approval actions.
2. Reject: This action will be marked as rejected and the workflow will be terminated.
3. Reject & Remove from workflow: This action will be marked as rejected but will be active so that the next person in the approval workflow can take the approval actions.

**Type of Approvals**

1. Sequential: In this type of approval, all users have to take the approval action in sequential order as configured. E.g. If **Elsa Ingram** and **Nick Holden** have been added as approvers for Sequential, it is required to first get the action taken by Elsa Ingram and then Nick Holden will have the option to take approval action.
2. Round-robin: In this type of approval, all users have to take the approval action in any order as configured. E.g. If **Elsa Ingram** and **Nick Holden** have been added as approvers for Round-robin, it is required to get the action taken by Elsa Ingram and Nick Holden.
3. Any one: In this type of approval, any user can take the approval action in any order as configured. E.g. If **Elsa Ingram** and **Nick Holden** have been added as approvers for Any one, it is required to get the action taken by Elsa Ingram or Nick Holden.

**Approval Levels:** We can add  $n$  number of levels having any type of approvals. Each level can be executed accordingly. For example see below how levels and approvers are added and what type of action can be taken:

### Example 1

#### **Level -1 (Sequential)**

<b>Users</b>	<b>Approval Action</b>	<b>Workflow Status</b>
Elsa Ingram	Approved	Active
Nick Holden	Approved	Active

#### **Level -2 (Round-robin)**

<b>Users</b>	<b>Approval Action</b>	<b>Workflow Status</b>
Paul Marsh	Approved	Active
D Joshi	Approved	Active
John	Rejected	Terminated

#### **Level -3 (Any-one)**

<b>Users</b>	<b>Approval Action</b>	<b>Workflow Status</b>
Nick Holden	--	Terminated
John	--	Terminated

**Final Result: This workflow was terminated**

### **Example 2**

#### **Level -1 (Sequential)**

<b>Users</b>	<b>Approval Action</b>	<b>Workflow Status</b>
Elsa Ingram	Approved	Active
Nick Holden	Reject & Remove from workflow	Active

#### **Level -2 (Any-one)**

<b>Users</b>	<b>Approval Action</b>	<b>Workflow Status</b>
Nick Holden	Approved	Active
John	--	--

#### **Level -2 (Round-robin)**

<b>Users</b>	<b>Approval Action</b>	<b>Workflow Status</b>
Paul Marsh	Approved	Active
D Joshi	Approved	Active
John	Approved	Active

**Final Result: This workflow was executed successfully**