

Object Oriented Analysis & Design

Case Study 2

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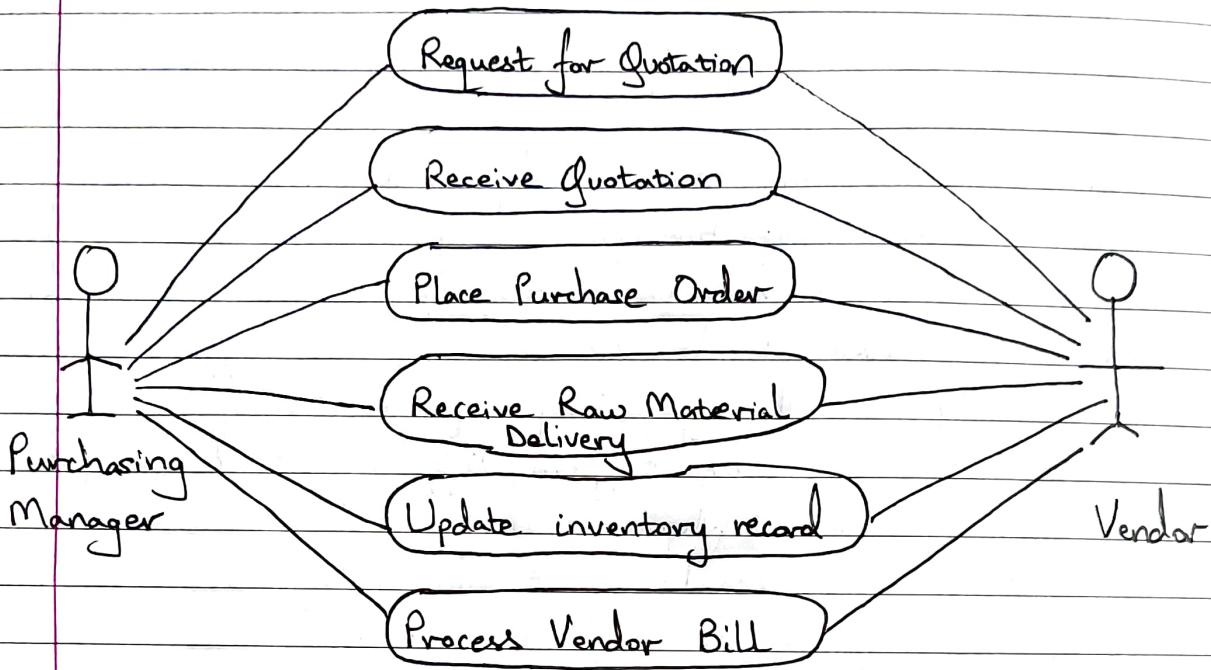
Assume the following case study and answer the questions:

Consider a car manufacturing company, which manufactures 2 Wheelers in 3 variants as: non-gear, bike with gear, and racer bike, each variant has its different features.

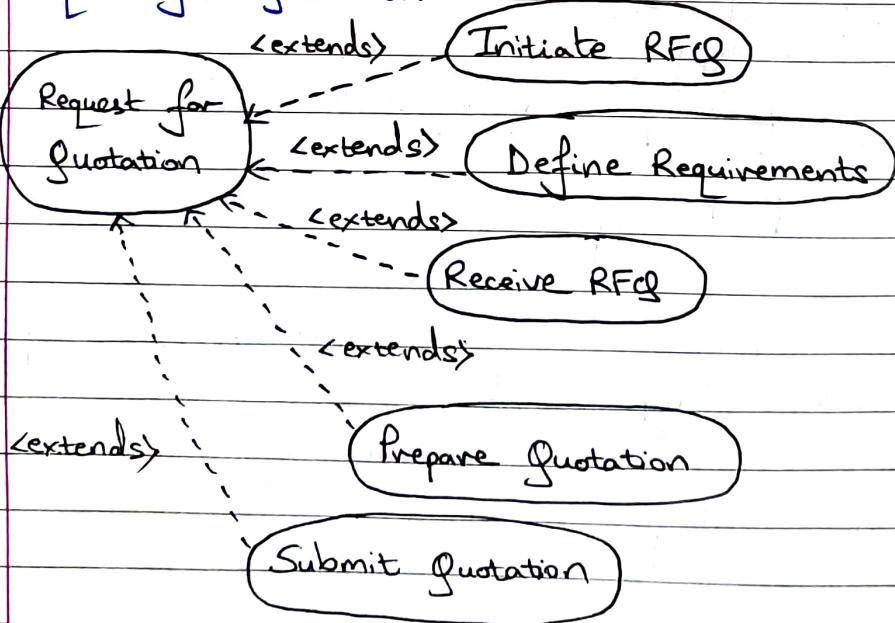
The company has the following operational procedures:

1. It purchases raw materials from different vendors for manufacturing the 2 Wheeler.
2. It maintains the records of raw materials and its billing and payment details of the vendor.
3. The 2 Wheeler manufacturing process has sub-processes :
 - Creation of Body
 - Engine Assembling
 - Assembling the body with engine & wheels
 - Painting
 - Finishing and Testing
4. Company also maintains the employee records, daily attendance and salary records.
5. Company also has the waste management process to destroy the wastage.

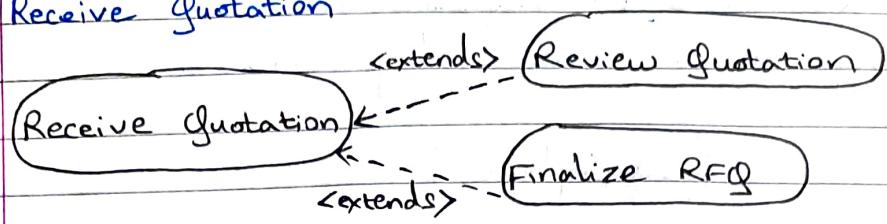
Q1. Use Case for Process 2 : maintains records of raw materials & its billing & payment details of the vendor.



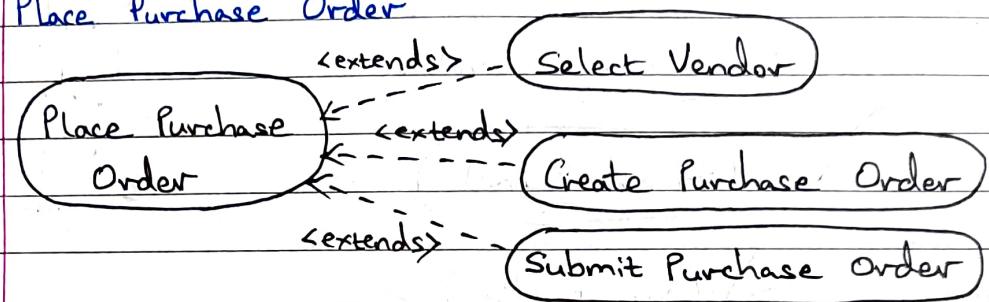
Request for Quotation



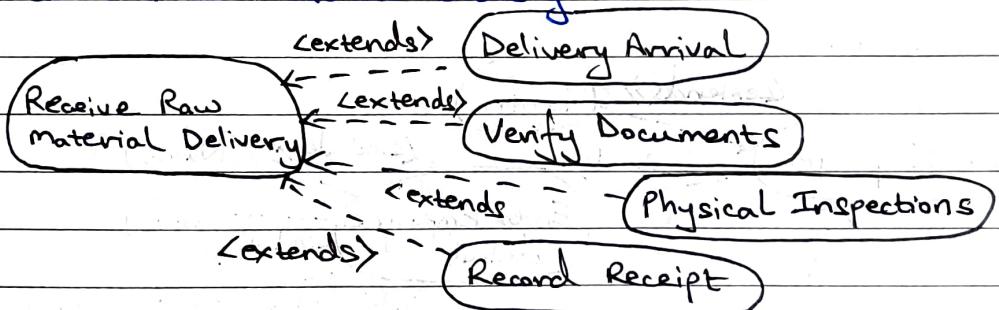
Receive Quotation



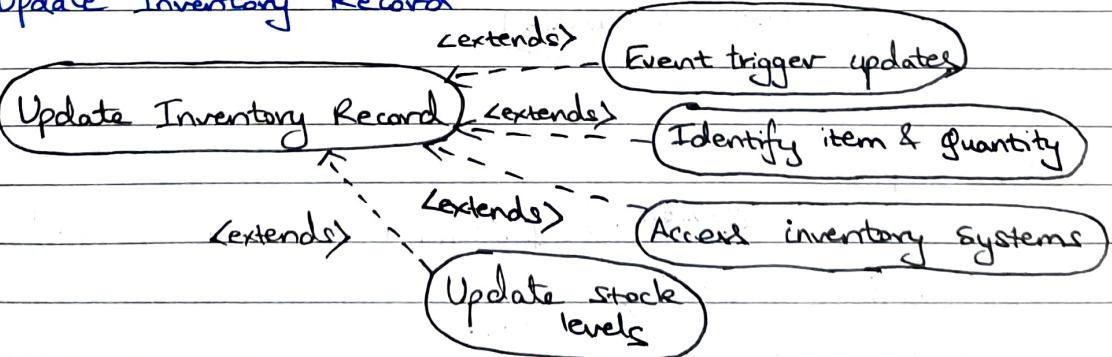
Place Purchase Order



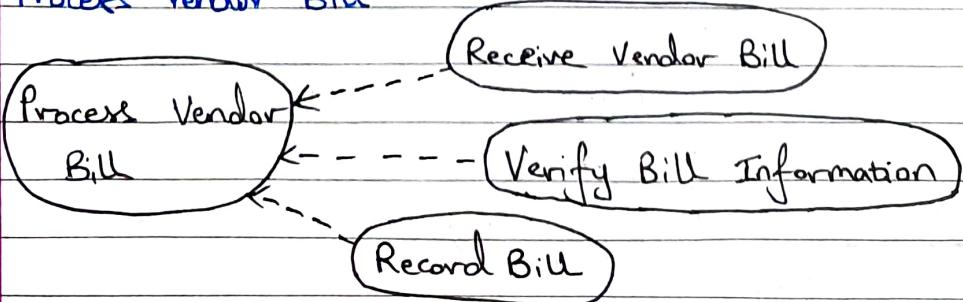
Receive Raw Material Delivery



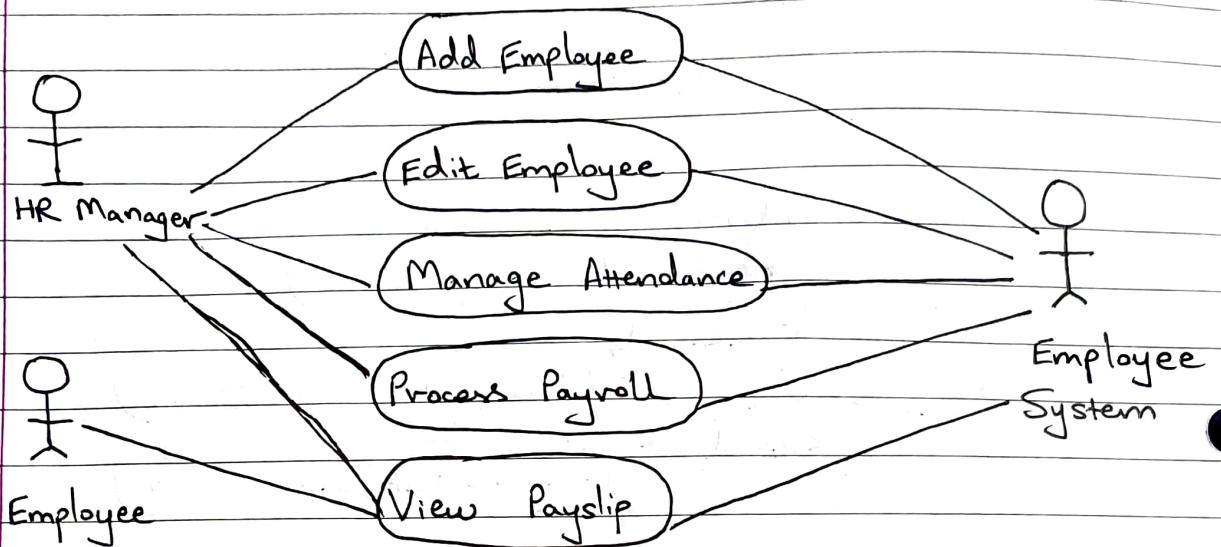
Update Inventory Record



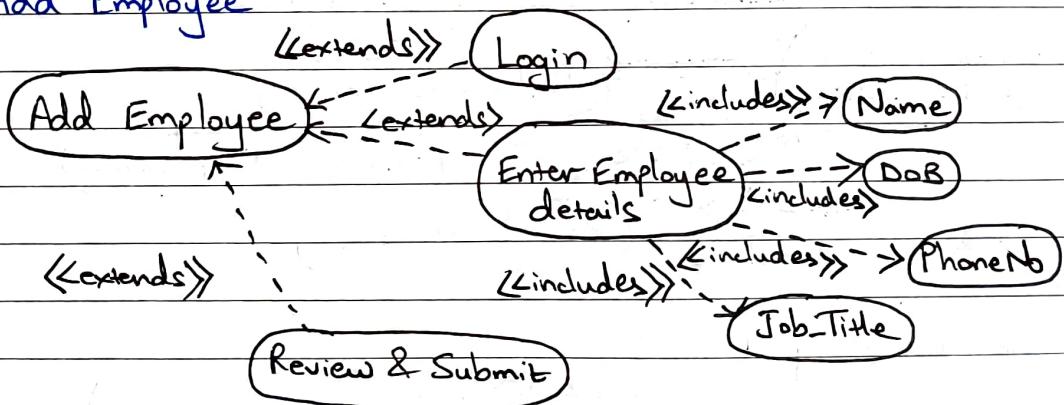
Process Vendor Bill



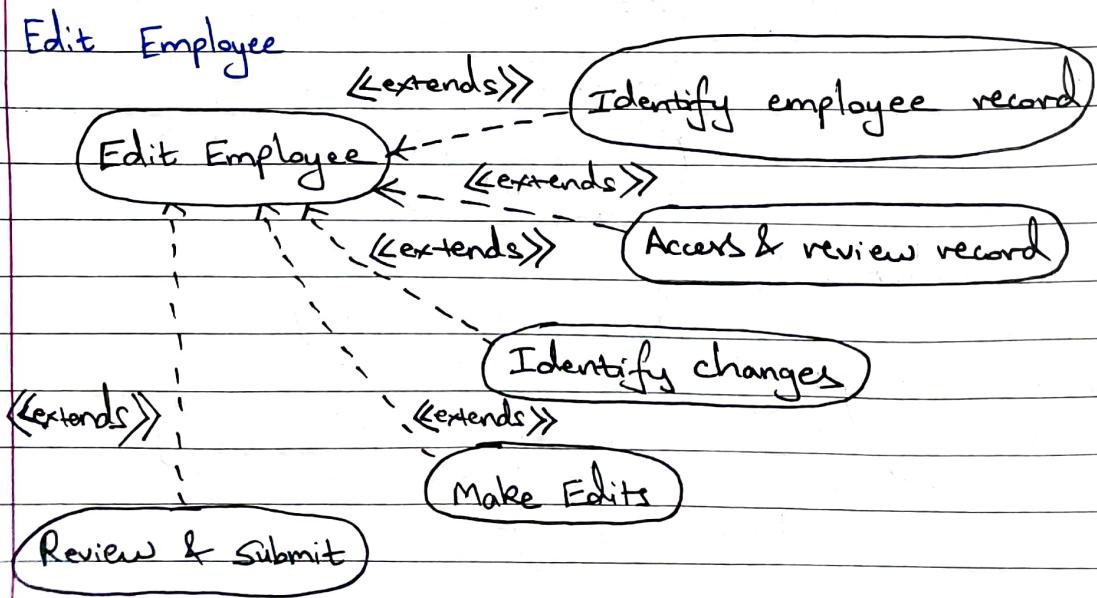
Use case for Process 4: Company maintains the employee records, daily attendance & salary records.

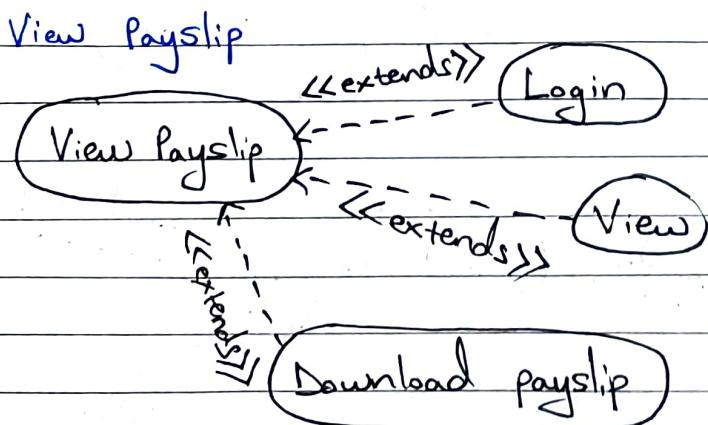
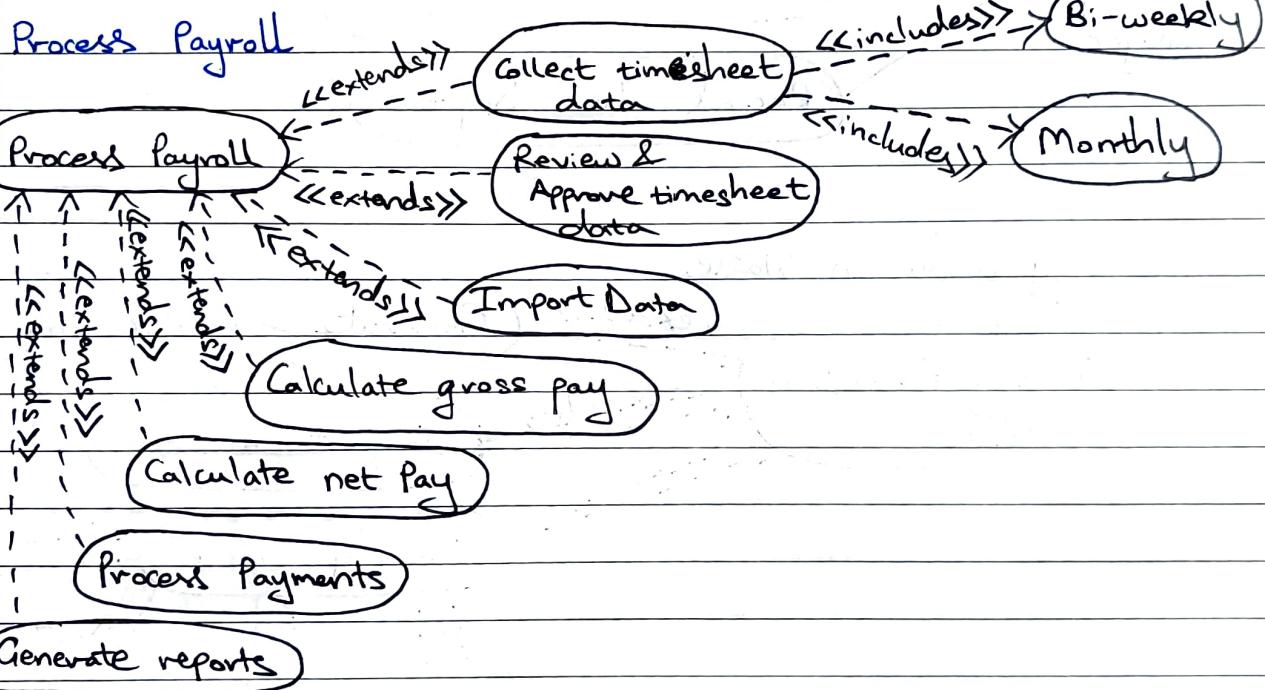
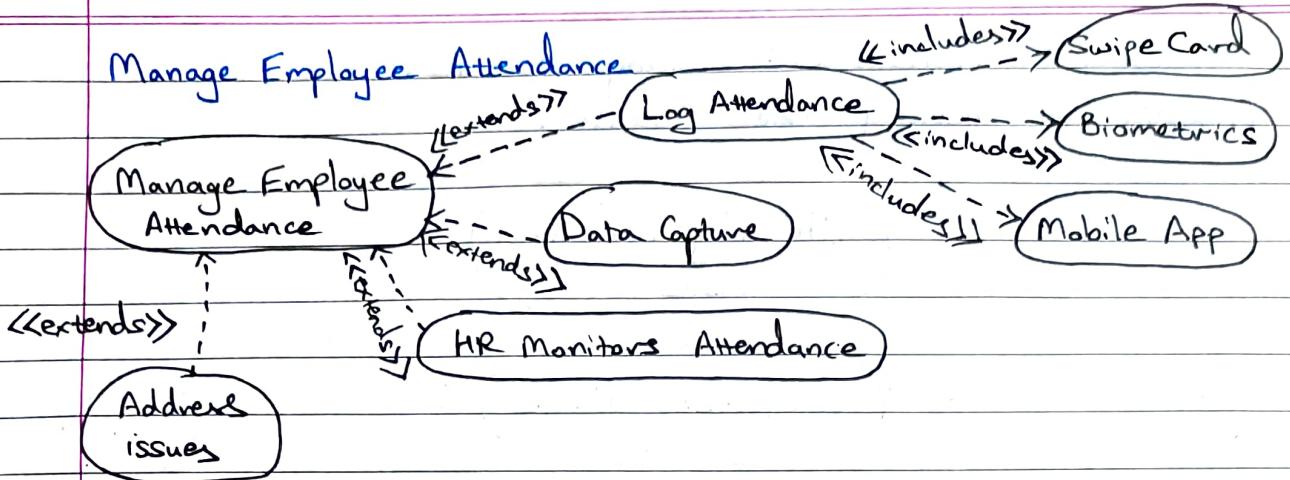


Add Employee

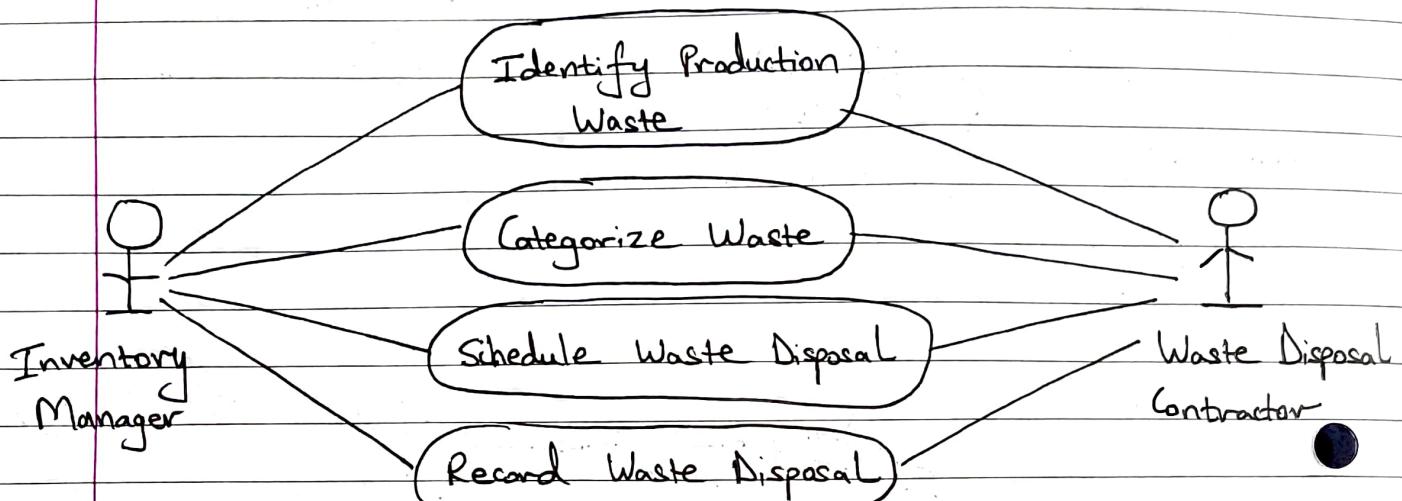


Edit Employee

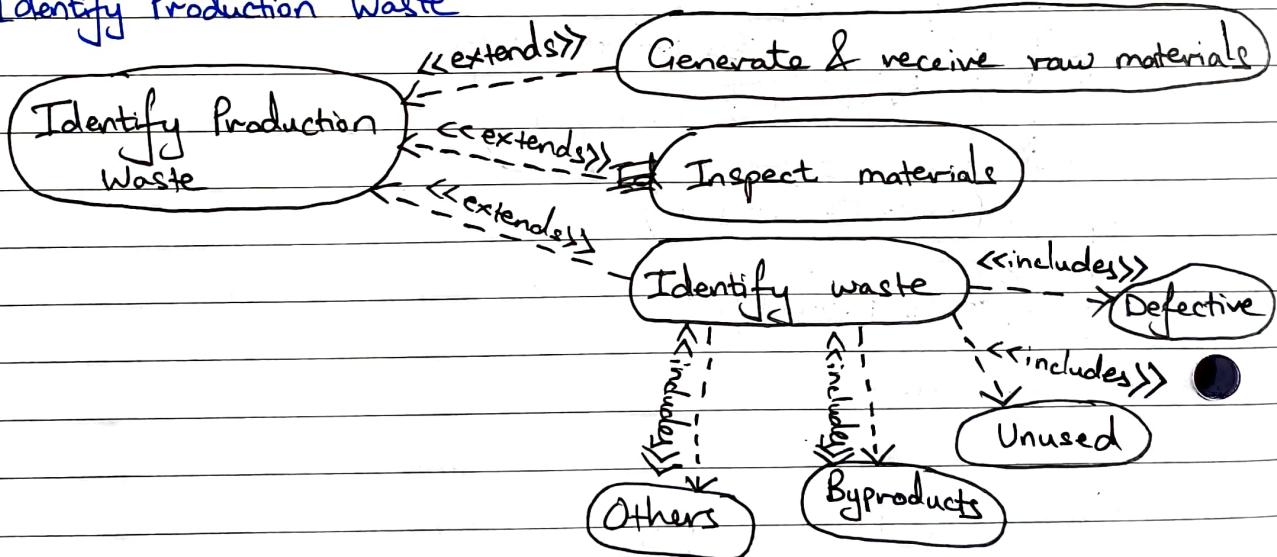




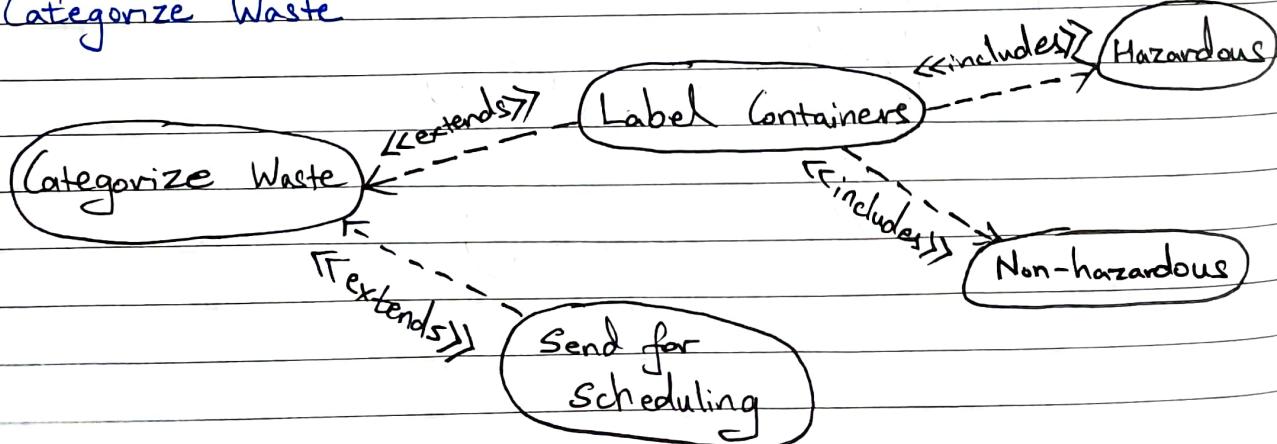
Use Case for Process 5: Company also has the waste management process to destroy the waste.



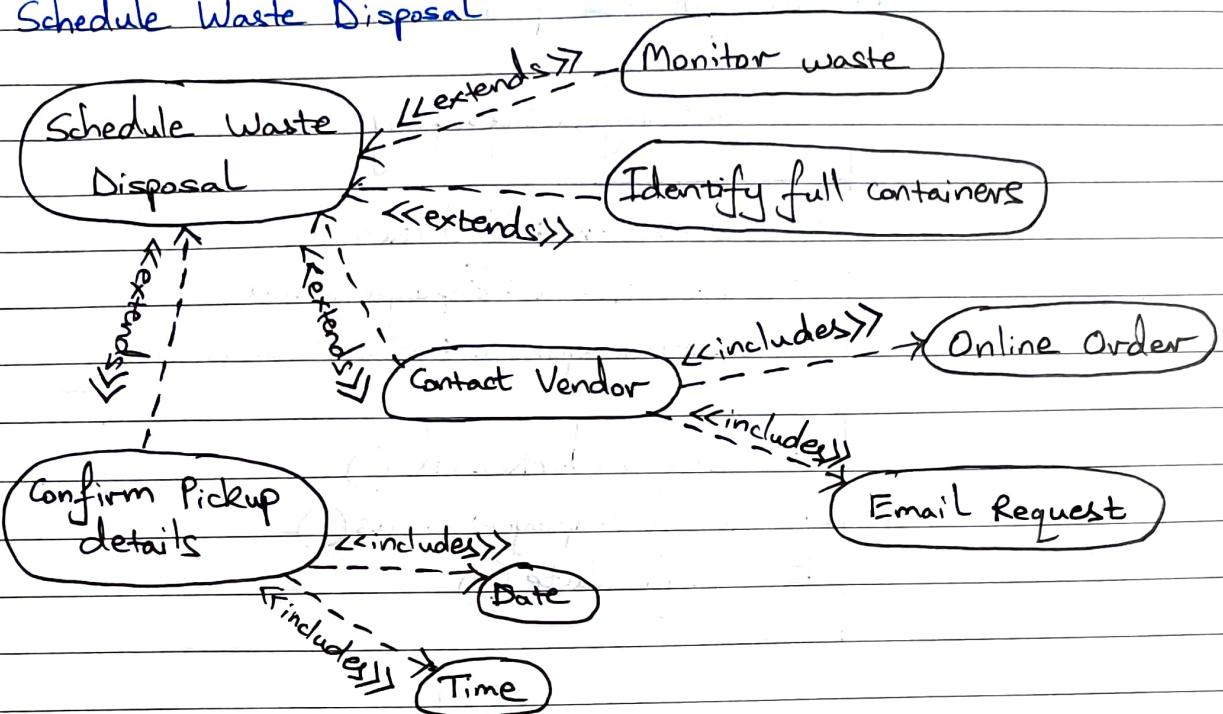
Identify Production Waste



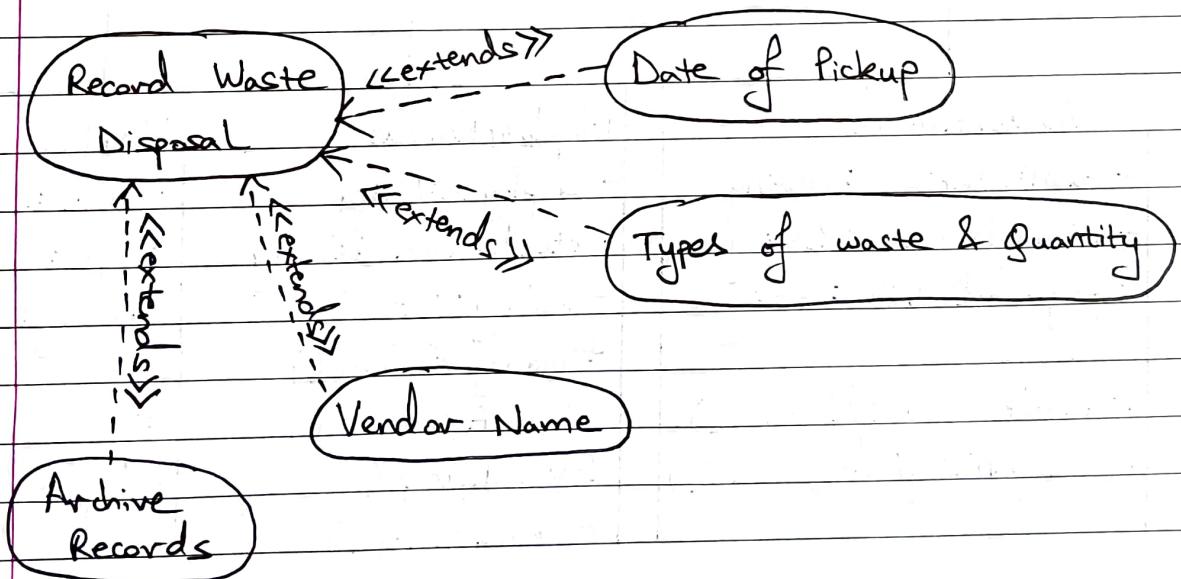
Categorize Waste



Schedule Waste Disposal



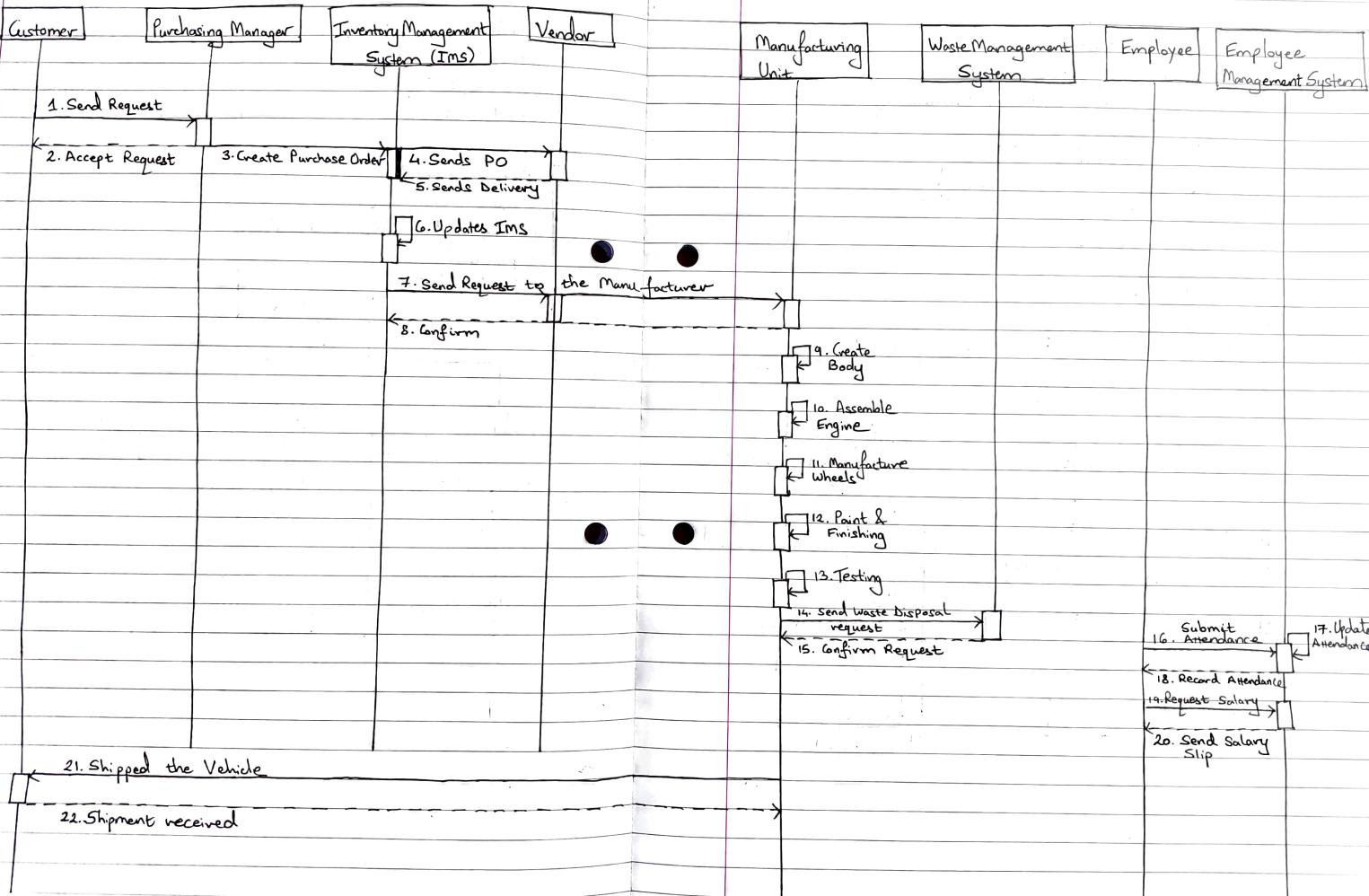
Record Waste Disposal



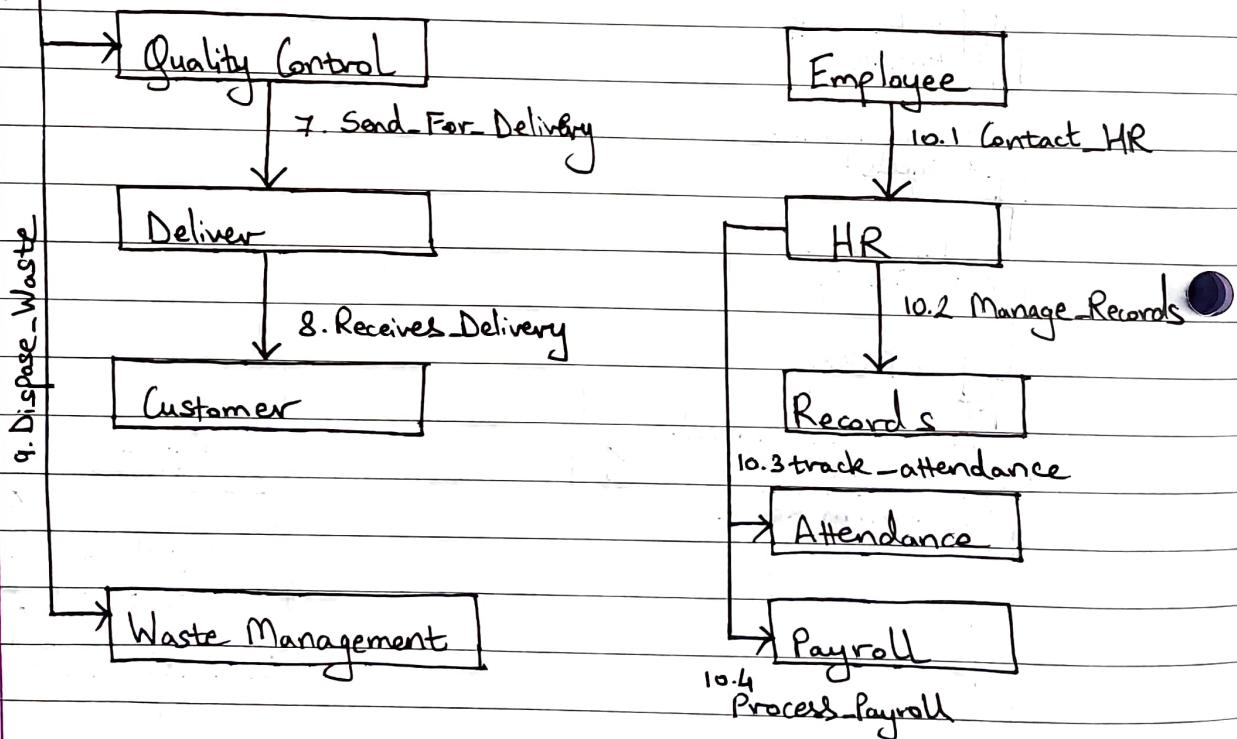
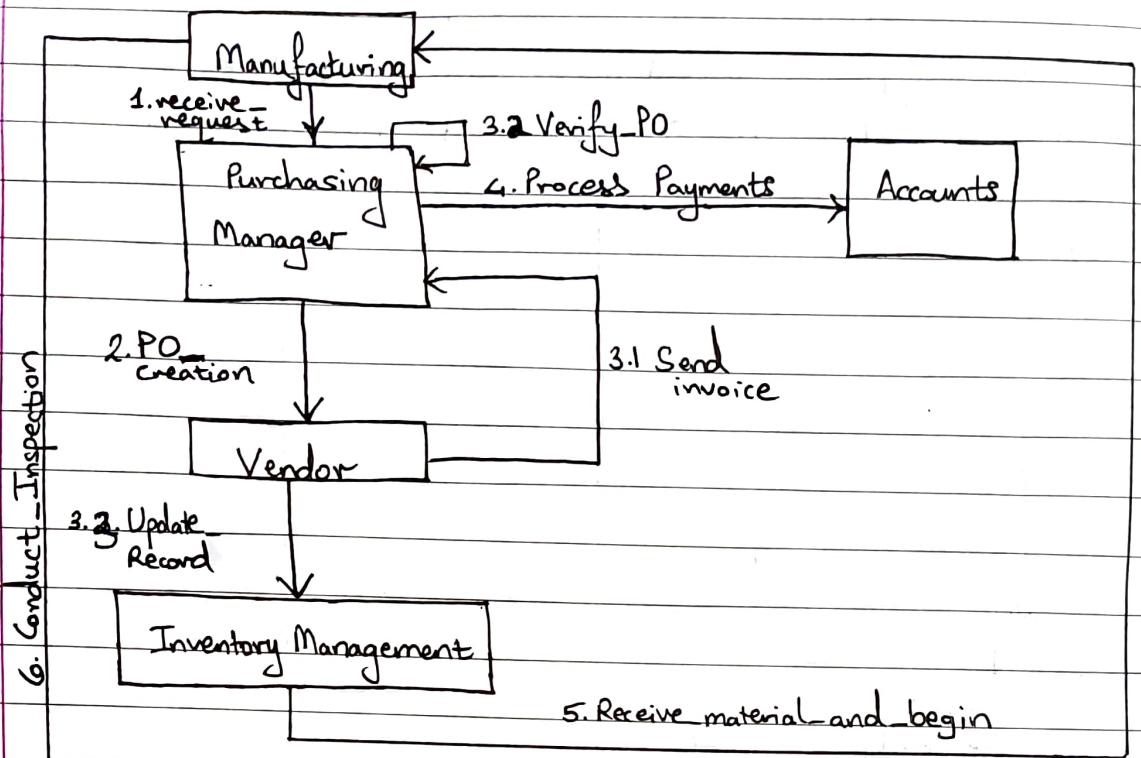
Q2. Class Diagram for all processes.

CarManufacturingCompany <ul style="list-style-type: none"> - vendorRecords : VendorRecords - employeeRecords : EmployeeRecords - wasteManagement : WasteManagement <ul style="list-style-type: none"> + manageVendorRecords() + manageEmployeeRecords() + manageWaste() 		ManufacturingProcess <ul style="list-style-type: none"> - body : Body - engine : Engine - wheels : Wheels <ul style="list-style-type: none"> + createBody() + assembleEngine() + assembleBodyWithEngineAndWheels() + paint() + finishAndTest() 		TwoWheeler <ul style="list-style-type: none"> - vehicleID : int - model : String - variant : String <ul style="list-style-type: none"> + manufacture() : ManufacturingProcess 	
VendorRecords <ul style="list-style-type: none"> - rawMaterial : String - billingDetails : String - paymentDetails : String <ul style="list-style-type: none"> + recordRawMaterialDetails() + manageBillingAndPayment() 	EmployeeRecords <ul style="list-style-type: none"> - employee : String - attendanceRecord : String - salary : int <ul style="list-style-type: none"> + manageEmployee() + trackAttendance() + viewPaySlip() + creditSalary() 	WasteManagement <ul style="list-style-type: none"> - waste : String - type : String - quantity : int <ul style="list-style-type: none"> + manageWaste() + disposeWaste() 	Body <ul style="list-style-type: none"> - material : String - design : String <ul style="list-style-type: none"> + setMaterial() + setDesign() 	Engine <ul style="list-style-type: none"> - type : String - horsepower : int <ul style="list-style-type: none"> + setType() + setHorsepower() 	Wheels <ul style="list-style-type: none"> - size : int - material : String <ul style="list-style-type: none"> + setSize() + setMaterial()

Q3. Draw a sequence diagram.



Draw Communication Diagram



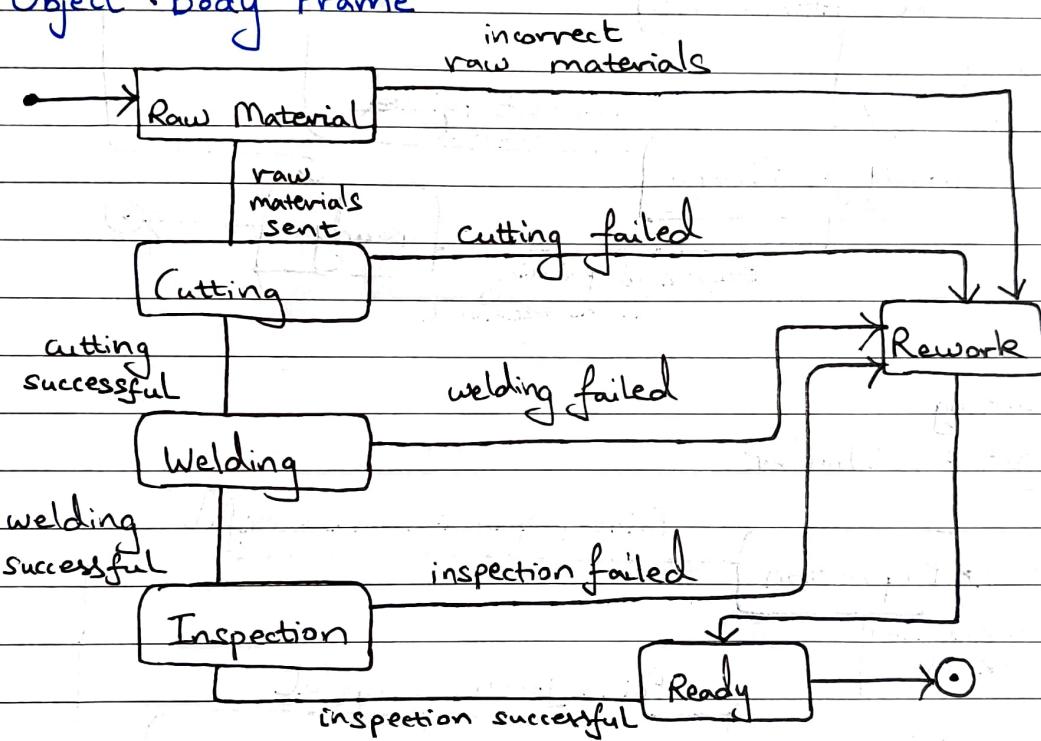
Q4. List all the objects of Process 3 and draw a state transition diagram of each object.

Objects

1. Body Frame
2. Engine
3. 2 Wheeler

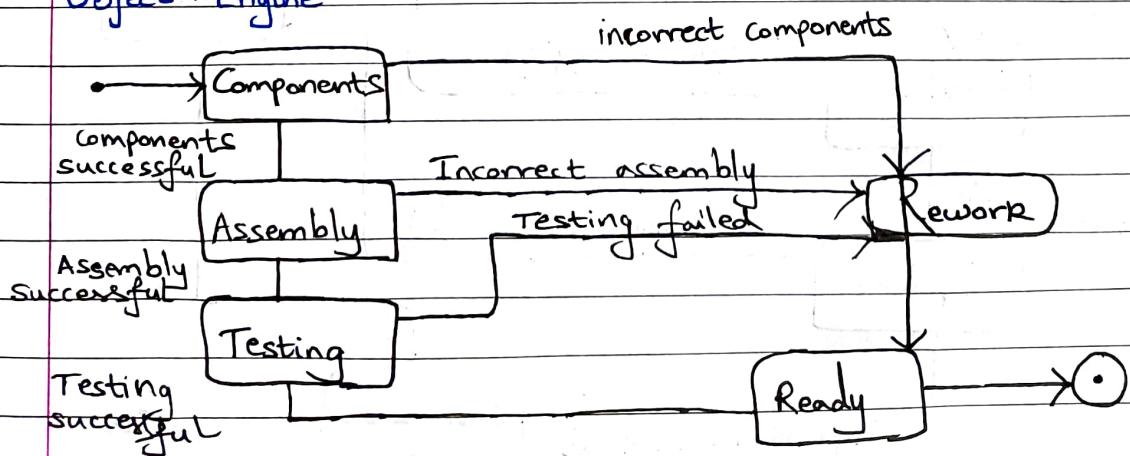
1. Body Creation

Object : Body Frame



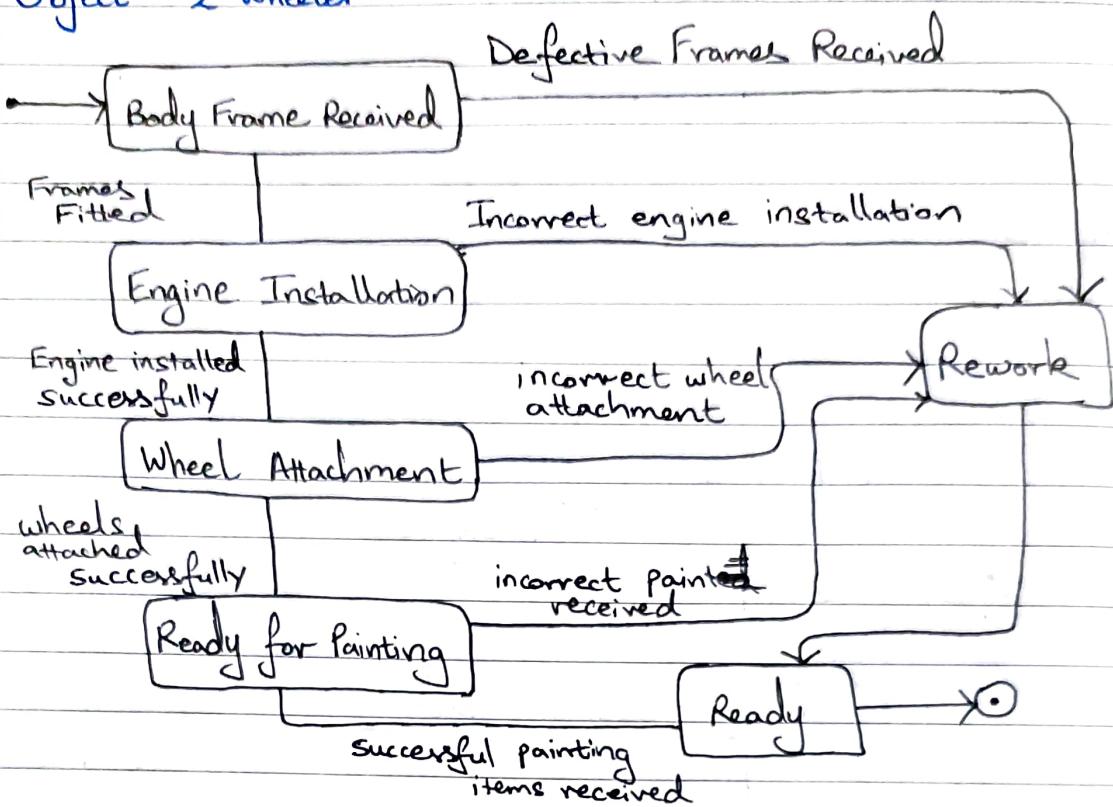
2. Engine Assembly

Object : Engine



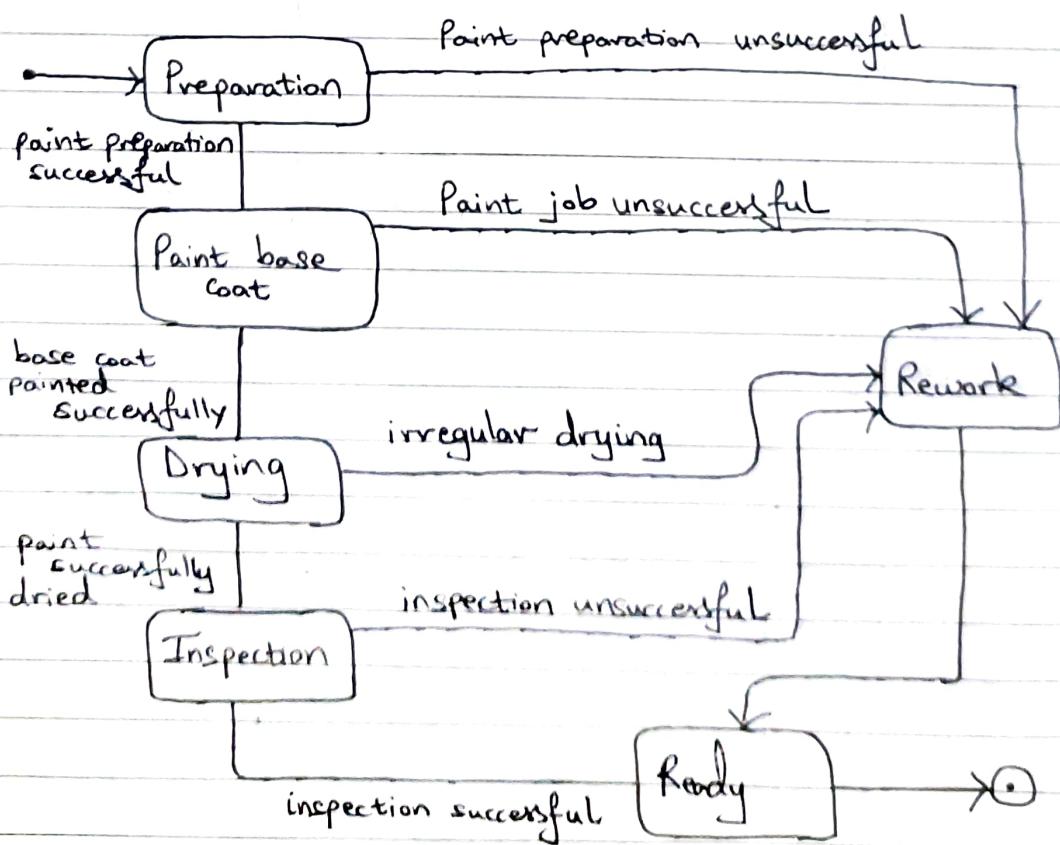
3. 2 Wheeler Assembly

Object : 2 Wheeler



4. Painting

Object : 2 Wheeler



5. Finishing and Testing

Object : 2 Wheeler

