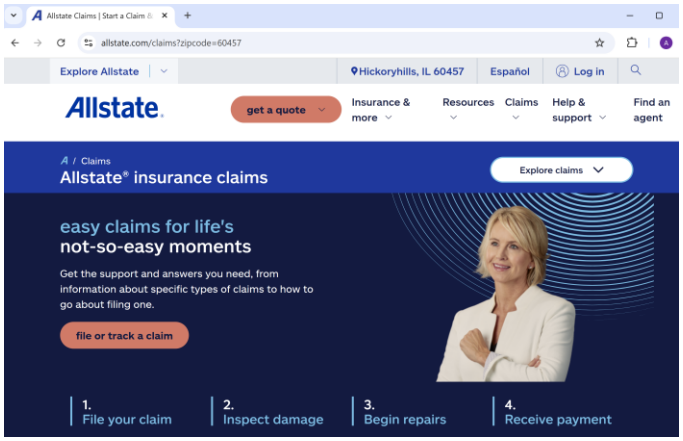
Assignment_3



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Overview:

In this assignment you will use Langchain/Langgraph framework to create multiple AI agents for Allstate Auto Insurance Claim Settlement who will coordinate, synchronize, and act to process claims submitted by the customers of Allstate.

Instructions:

1. Create venv that has Python 3.10
2. Activate the venv you created (venv\scripts\activate)
3. pip install langchain==0.3.13
4. pip install langgraph== 0.2.60
5. pip install openai== 1.58.1
6. Use the venv that you have created to implement all requirements listed under the Requirements section.
7. Store all items listed under the Deliverables section in a ZIP file
8. Follow the steps listed under Submission sections for your assignment submission.

Submission:

1. Submit your assignment as a SINGLE ZIP file on Canvas by the due date.
2. All deliverables listed under the Deliverables section must be submitted in a ZIP file that has the name: Assignment_1_Your_LastName.zip

Deliverables:

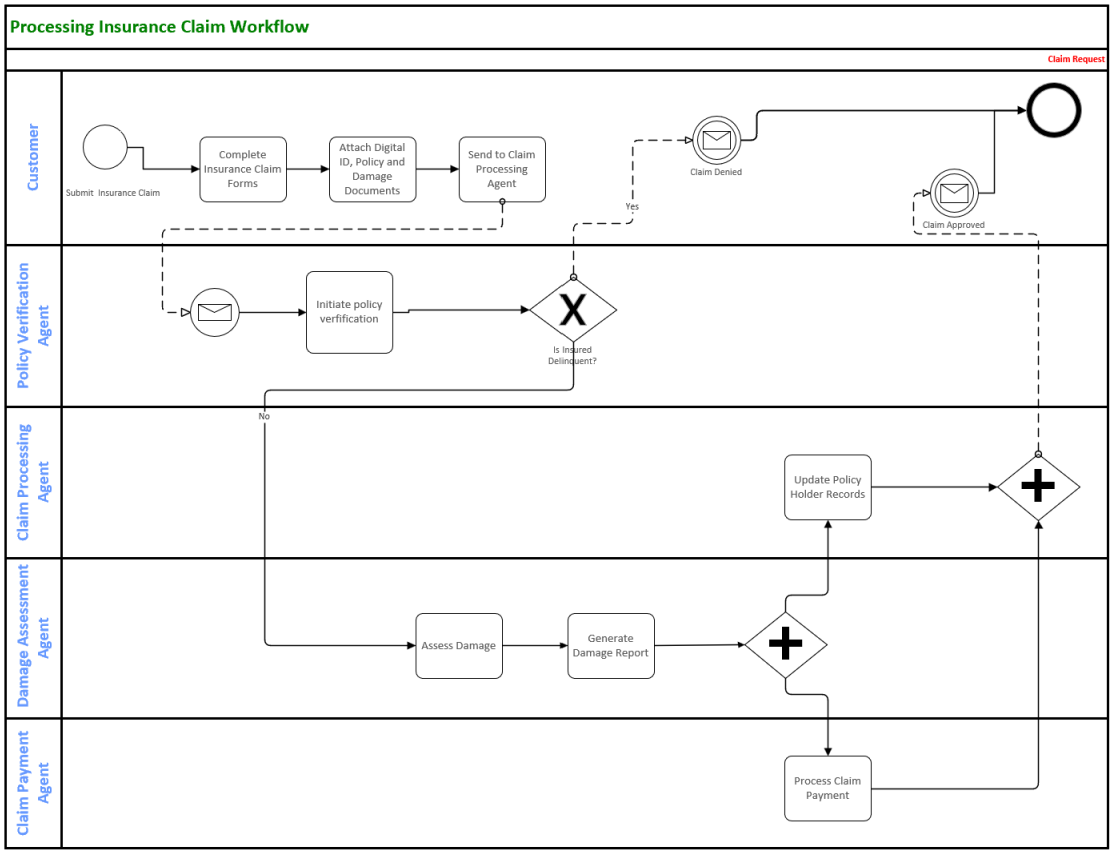
1. All source code that you installed, compiled and built on your personal computer.
2. PDF document report that has your answers (source-code snippet, input, output, your commentaries) for every requirement listed below.
3. Panopto video recording (5 to 10 minutes) of a live run/demo of your code on your personal development computer.

Requirements:

1. Use Langchain/Langgraph framework to create an IPYNB script to build the graph of AI agents for Allstate who will coordinate, synchronize and act to process insurance claims submitted by the customers.

2. Create a graph using Langchian/Langgraph to capture the logic claim processing based on the following BPMN diagram (you must an AI agent for every role/persona listed in the diagram):

Allstate Auto Insurance Claim Settlement Workflow



3. The insured person must enter the policy number and a picture of the car damage. Use policy number (999 876 543) and the following provided image for testing your AI Agents:

4. The policy verification agent will verify the entered policy number by the insured matches the policy record on file and the insured is not delinquent. The agent will use the following insurance policy declaration PDF document for verification of policy number, effective date and whether the insured is delinquent or not. If all checks pass the verification, the damage assessment agent will proceed to assess the damage, otherwise the policy verification agent will send a claim denied notification to the insured.

Policy number: **999 876 543**
Policy effective date: **January 14, 2025**

Allstate.

Coverage detail for Honda Accord 2022

Coverage	*Limits*	*Deductible*	*Premium*
Automobile Liability Insurance		Not applicable	$257.02
• Bodily Injury	$50,000 each person $100,000 each occurrence		
• Property Damage	$200,000 each occurrence		
Automobile Liability insurance limits of insured vehicles cannot be stacked or aggregated.			
Uninsured Motorists Insurance		Not applicable	$26.50
• Bodily Injury (Includes Underinsured Motorists Protection)	$50,000 each person $100,000 each accident		
Uninsured Motorists Insurance limits of insured vehicles cannot be stacked or aggregated.			
Auto Collision Insurance	Actual cash value	$600	$461.73
Auto Comprehensive Insurance	Actual cash value	$0	$180.79
Collision for Custom Equipment	**Not purchased***		
Comprehensive for Custom Equipment	**Not purchased***		
Roadside Coverage	$100 each disablement	Not applicable	$7.04
Transportation Expense	up to $30 per day for a maximum of 30 days	Not applicable	$24.38
Auto Replacement Protection	**Not purchased***		
Automobile Medical Payments	$5,000 each person	Not applicable	$11.37
Portable Electronics and Media	**Not purchased***		
Sound System	**Not purchased***		
Total premium for Honda Accord 2022			**$968.83**

*** This coverage can provide you with valuable protection. To help you stay current with your insurance needs, contact your Allstate agent to discuss coverage options and other products and services that can help protect you.**

VIN VYXGH98769879

Additional coverage

The following policy coverage is also provided.

Coverage	*Limits*	*Deductible*	*Premium*
Automobile Death Indemnity Insurance	$10,000 benefit	Not applicable	Included
Total			**$0.00**

5. After receiving the message that policy verification has passed from the policy verification agent, the insurance assessment agent will process the submitted image of the car damage and will generate the assessment report and payment amount that will be communicated back to the claim processing agent and claim payment agent.

6. The claim processing agent must wait on the completion of payment authorization from the payment processing agent before sending a notification to the insured that the submitted claim is processed and approved.

7. Provide 5 runs that will demonstrate a fully functional application for every scenario listed below:
    - The policy verification agent can recognize a delinquent insured
    - The policy verification agent can recognize an invalid policy number entered by the insured
    - The assessment agent can recognize and classify the damage from the image submitted by the insure for a major damage
    - The assessment agent can recognize and classify the damage from the image submitted by the insure for a minor damage
    - The assessment agent can recognize and classify the damage from the image submitted by the insure for a moderate damage