

### Q1a. ChatGPT for text-classification:

**N You**

Harry is a kind child. He lost his parents when he was just a baby. He lives with his aunt and uncle, who do not treat him well. They pretend he is a burden to them and that he does not deserve to be happy as he is a different child. He is also brave and loyal to a fault.

Cedric is a charming young man. He lost his mother when he was a young boy, and has been living with his father since. Losing a loved one very young in his life has taught him to be kind and loving to people around him. He would go to any lengths to help his friends and family, even if he is not brave and courageous. He has a knack for finding stuff or patterns that no one else can.

Hermione is a brilliant and smart girl. She believes almost everything can be answered through logic and reasoning. She loved devouring new knowledge. Furthermore, she loves visiting the library on weekends and spending all day there. She is wise beyond her age, and everyone admires her for her wit and brains.

Draco is a smart boy who has a special talent for getting things done his way. He uses his charming and mysterious personality to grab others' attention and turn their heads towards him. He does not believe in being in the spotlight by doing heroic deeds, but in slithering his way to the top without making much noise. He does not believe that the world is divided into black and white, but is a blur of greys.

All these four kids are to enroll into Hogwarts. There, they are to be sorted into houses Gryffindor, Ravenclaw, Slytherin, and Hufflepuff based on their personalities. What house do you think each kid belongs in?



**ChatGPT**

Based on their personalities and traits described:

1. **Harry:** Gryffindor. He is kind, brave, and loyal, which are qualities valued in Gryffindor House.
2. **Cedric:** Hufflepuff. Cedric's kindness, love for helping others, and his knack for finding things align well with the values of Hufflepuff House, which values hard work, dedication, and loyalty.
3. **Hermione:** Ravenclaw. Her love for learning, logic, reasoning, and wisdom beyond her years make her a perfect fit for Ravenclaw House, known for its focus on intelligence, wit, and knowledge.
4. **Draco:** Slytherin. Draco's intelligence, talent for getting things done his way, and belief in navigating the world in shades of grey rather than black and white are typical traits associated with Slytherin House, which values ambition, cunning, and resourcefulness.



## Q1b. ChatGPT for Topic Modeling:

**N You**

If you had to figure out the top matching personality keywords of each kid with their house, what would those words be?



**ChatGPT**

Here are the top matching personality keywords for each kid with their respective Hogwarts house:

1. **Harry (Gryffindor):**

- Kind
- Brave
- Loyal
- Courageous

2. **Cedric (Hufflepuff):**

- Kind
- Loving
- Helpful
- Dedicated

3. **Hermione (Ravenclaw):**

- Brilliant
- Smart
- Logical
- Wise

4. **Draco (Slytherin):**

- Smart
- Charming
- Resourceful
- Ambitious



**N You**

Only include the words that are actually mentioned in their personality descriptions.



## ChatGPT

📖 Memory updated

Here are the top matching personality keywords for each kid with their respective Hogwarts house, based only on the words mentioned in their personality descriptions:

1. **Harry (Gryffindor):**

- Kind
- Brave
- Loyal

2. **Cedric (Hufflepuff):**

- Kind
- Loving
- Dedicated

3. **Hermione (Ravenclaw):**

- Brilliant
- Smart
- Logical
- Wise

4. **Draco (Slytherin):**

- Smart
- Charming
- Resourceful
- Ambitious

Q1c. ChatGPT for Text Clustering:



**You**

Based on the similarities and complementary nature of their personality traits, which kids would befriend each other?



**ChatGPT**

Based on the similarities and complementary nature of their personality traits:

1. **Harry and Cedric:** Both Harry and Cedric share qualities like kindness and loyalty, making them likely to befriend each other. Cedric's loving and helpful nature would complement Harry's bravery and loyalty, creating a strong bond.
2. **Hermione and Draco:** While Hermione's intelligence, logic, and wisdom align more with Ravenclaw traits, Draco's smart, charming, and resourceful personality could create an interesting dynamic with Hermione. Their differences might spark intellectual conversations and mutual respect for each other's strengths.

These pairings consider both similarities and potential for complementary interactions based on the given descriptions.



**You**

Let's pretend that a customer has trouble returning a clothing item I purchased from Sara, an online clothing platform. Create a small conversation between the customer and the agent.



**ChatGPT**

Customer: Hello, I recently purchased a clothing item from your online platform, but I'm having trouble returning it. Can you help me with that?

Agent: Of course, I'd be happy to assist you with the return process. Could you please provide me with your order number and a brief description of the issue you're experiencing?

Customer: Sure, my order number is 12345. The problem is that the item doesn't fit me properly, and I'd like to exchange it for a different size.

Agent: Thank you for providing the order number and explaining the issue. Let me check the details of your order and see what options are available for the exchange. Just a moment, please.

(After a brief pause)

Agent: I've reviewed your order, and I see that we do have the item available in the size you need for exchange. Since the issue is related to sizing, I'll go ahead and initiate the exchange process for you. You'll receive an email with the return instructions and a prepaid shipping label shortly. Is there anything else I can assist you with?


Customer: That sounds great, thank you for your help. No, that's all for now. I appreciate your quick response and assistance.

Agent: You're welcome! If you have any further questions or need additional assistance in the future, feel free to reach out to us. Thank you for shopping with us, and have a great day!


(Customer ends the conversation)

## Q2. Customer service chat-bot

### Screenshot #1:

 **You**

Let's pretend that a customer has trouble returning a clothing item I purchased from Sara, an online clothing platform. Create a small conversation between the customer and the agent.

 **ChatGPT**

Customer: Hello, I recently purchased a clothing item from your online platform, but I'm having trouble returning it. Can you help me with that?

Agent: Of course, I'd be happy to assist you with the return process. Could you please provide me with your order number and a brief description of the issue you're experiencing?

Customer: Sure, my order number is 12345. The problem is that the item doesn't fit me properly, and I'd like to exchange it for a different size.

Agent: Thank you for providing the order number and explaining the issue. Let me check the details of your order and see what options are available for the exchange. Just a moment, please.

(After a brief pause)

Agent: I've reviewed your order, and I see that we do have the item available in the size you need for exchange. Since the issue is related to sizing, I'll go ahead and initiate the exchange process for you. You'll receive an email with the return instructions and a prepaid shipping label shortly. Is there anything else I can assist you with?

Customer: That sounds great, thank you for your help. No, that's all for now. I appreciate your quick response and assistance.

Agent: You're welcome! If you have any further questions or need additional assistance in the future, feel free to reach out to us. Thank you for shopping with us, and have a great day!

(Customer ends the conversation)

## Screenshot #2:

**N You**

This does not seem ideal. The agent has not confirmed with the customer if they are ok with them initiating the exchange. They also did not confirm the price of the product, and if there was an update to the price for the new size. They also should confirm if the initial shipping address is still ok or if it should be shipped somewhere else?

**ChatGPT**

You're absolutely right, and I apologize for the oversight. Here's a revised version of the conversation taking into account the necessary steps and clarifications:

Customer: Hello, I recently purchased a clothing item from your online platform, but I'm having trouble returning it. Can you help me with that?

Agent: Of course, I'd be happy to assist you with the return process. Could you please provide me with your order number and a brief description of the issue you're experiencing?

Customer: Sure, my order number is 12345. The problem is that the item doesn't fit me properly, and I'd like to exchange it for a different size.

Agent: Thank you for providing the order number and explaining the issue. Before we proceed, I want to confirm a few details with you. Firstly, I'll check if the item in the desired size is available for exchange. Secondly, I'll confirm if there's any price difference for the new size, and if so, I'll inform you about it. Lastly, I'll verify the shipping address to ensure it's still accurate. May I proceed with these checks?

Customer: Yes, please go ahead.

Agent: Thank you for your confirmation. Let me check the availability of the new size, any price difference, and verify the shipping address. Please bear with me for a moment.

(After a brief pause)

Agent: I've checked the availability, and we do have the item in your desired size for exchange. There is a slight price difference, which I'll explain in detail. Additionally, I've verified your shipping address, and it's still accurate. Would you like me to proceed with initiating the exchange and sending you the return instructions via email?

Customer: Yes, that sounds good. Please go ahead.

Agent: Perfect, I'll proceed with the exchange process and send you the return instructions along with a prepaid shipping label via email. You'll also receive information about the price difference and any adjustments to your order. Is there anything else I can assist you with?

Customer: No, that's all for now. Thank you for your help.

Agent: You're welcome! If you have any further questions or need assistance in the future, feel free to reach out to us. Thank you for choosing us, and have a great day!

(Customer ends the conversation)



### Screenshot #3:

N

**You**

The price difference should be mentioned in the conversation and confirmed from the customer before initiating the return process. Can you make that change?



**ChatGPT**

Certainly! Here's the revised conversation with the inclusion of mentioning and confirming the price difference with the customer before initiating the return process:

Customer: Hello, I recently purchased a clothing item from your online platform, but I'm having trouble returning it. Can you help me with that?

Agent: Of course, I'd be happy to assist you with the return process. Could you please provide me with your order number and a brief description of the issue you're experiencing?

Customer: Sure, my order number is 12345. The problem is that the item doesn't fit me properly, and I'd like to exchange it for a different size.

Agent: Thank you for providing the order number and explaining the issue. Before we proceed, I want to confirm a few details with you. Firstly, I'll check if the item in the desired size is available for exchange. Secondly, I'll explain any price difference for the new size, and if you're okay with it, I'll proceed with the exchange. Lastly, I'll verify the shipping address to ensure it's still accurate. May I proceed with these checks?

Customer: Yes, please go ahead.


Agent: Thank you for your confirmation. Let me check the availability of the new size and the price difference. Please bear with me for a moment.

(After a brief pause)

Agent: I've checked the availability of the new size, and we do have it for exchange. However, there is a slight price difference due to the size change. The new price would be [mention the price difference]. Are you okay with this adjustment before I proceed with initiating the exchange and sending you the return instructions via email?

Customer: Yes, that's fine. Please go ahead.

Agent: Perfect, I'll proceed with the exchange process and send you the return instructions along with a prepaid shipping label via email. You'll also receive information about the price difference and any adjustments to your order. Additionally, I've verified your shipping address, and it's still accurate. Is there anything else I can assist you with?

Customer: No, that's all for now. Thank you  your help.



Q3. Please evaluate LLMs' performance for questions (1) and (2). Briefly discuss your evaluations on LLMs outputs for each question (out of 10).

Ans: For Q1, the LLM performed well and did not need extra prompts to arrive at the right answers. But for Q2, there were some mistakes it was doing by overlooking some details on how an actual agent would interact with a customer. This was rectified by adding information on prompts on what information should be included. For the first attempt, I would score its response a 7, an 8 for its second, and a 9 for the final one.

Q4. If you are asked to use RAG to create a chatbot for a company, what kind of bots do you want to create? You are free to choose any application context you are interested in and be creative. Please discuss the context of the application and explain why RAG and the bot you designed would help address the business or societal needs.

Ans: I would choose a bot that would help me analyze finance documents and company call transcripts so I would invest better in stocks. I would include these documents in tuning a regular model to train it in that domain and alert the customer when they are in a potential risk of losing money on a company. I would also make to include the quarterly comparative trend report of each company to notice overall growth pattern of those companies.