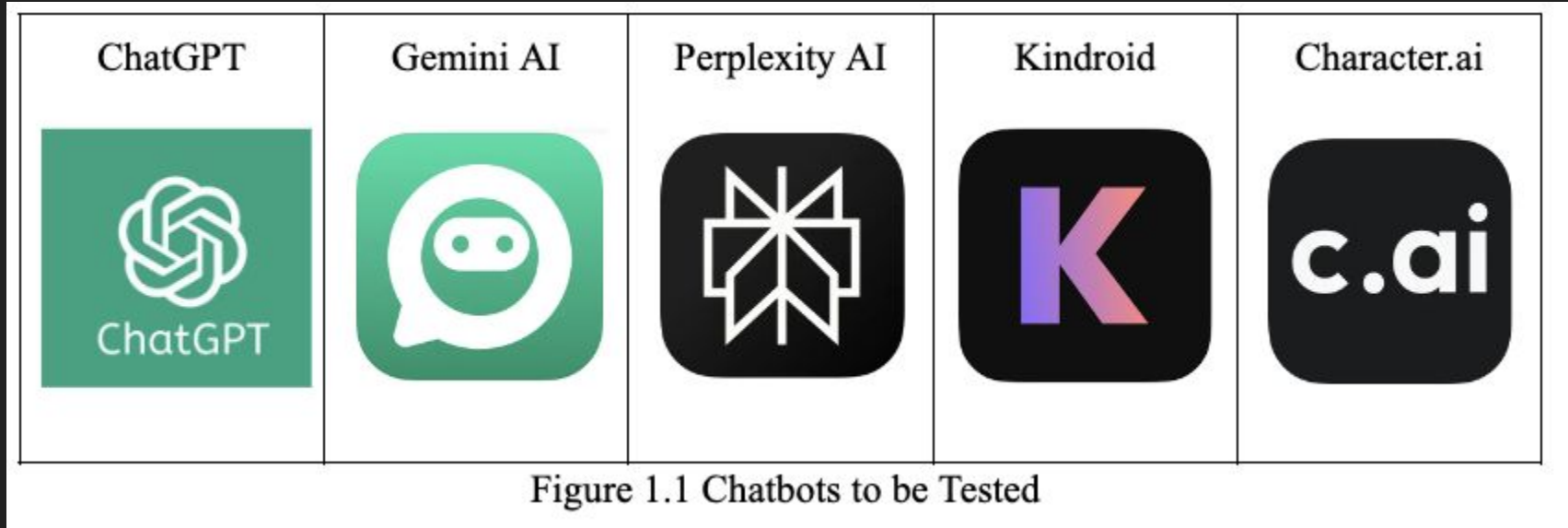


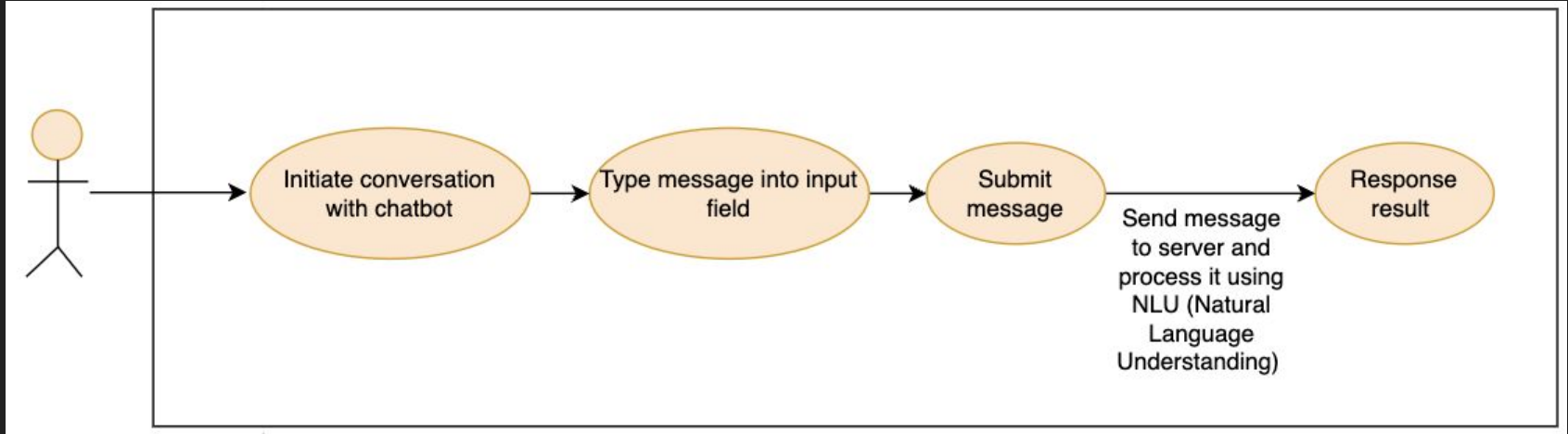
Intelligent ChatBot Application Testing - Formula 1

Group 2: Alex, Kevin, Davis, Ricky, Jordan

Selected Mobile Applications



Application Flowchart



Conventional Testing

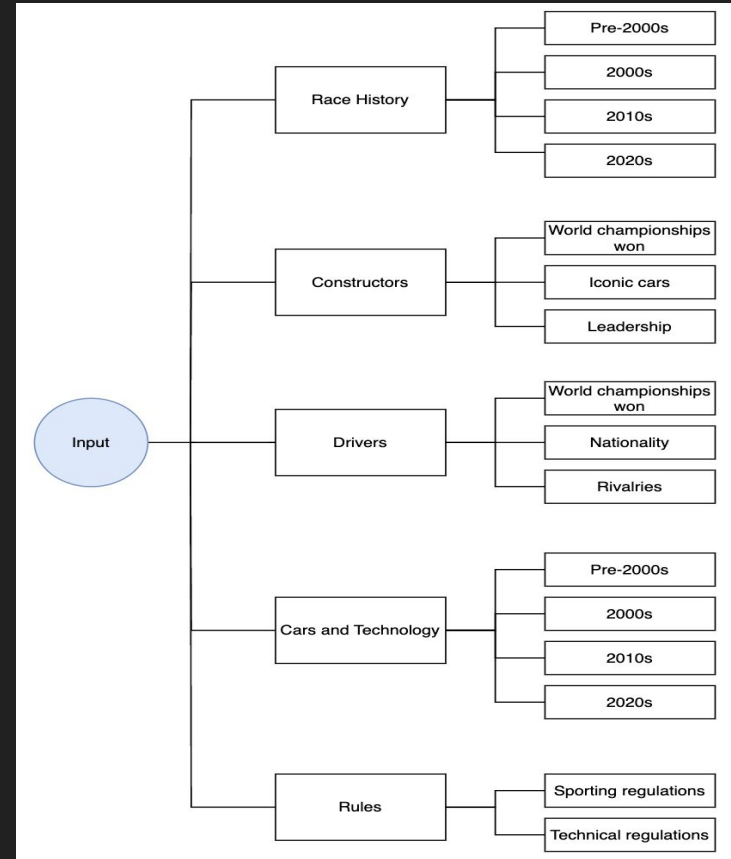
- This type of testing focuses on the essential functions of the application
- This testing was used to perform black-box testing for the 5 chatbot applications



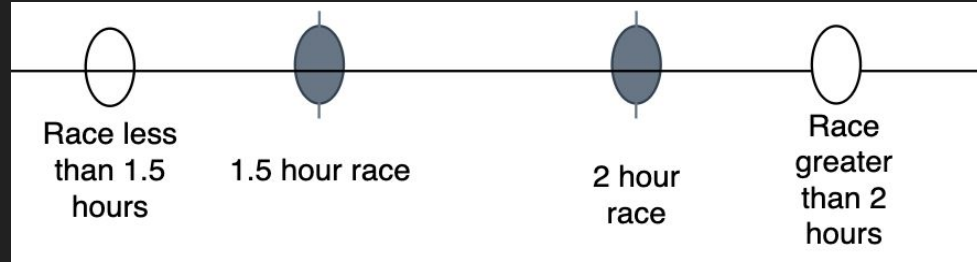
Conventional Testing - Methods

1. Equivalence Partition Testing - 16 Questions
2. Decision Table Testing - 12 Questions
3. Boundary Value Testing - 6 Questions
4. Scenario Based Testing - 3 Questions

Equivalence Partition



Boundary Value Testing



Decision Table

| Conditions /Actions | Rules | | | | | | | |
|---|-------|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| C1: Current F1 driver | T | T | T | T | F | F | F | F |
| C2: Retired F1 driver | T | T | F | F | F | F | T | T |
| C3: Random Person | T | F | T | F | F | T | F | T |
| A1: The person/thi ng is not an F1 driver. | | | | | | X | | |
| A2: The person/thi ng is an F1 driver | | | | X | | | X | |
| A3: Do not have access to the latest data | | | | | | | | |
| A4: Impossible | X | X | X | | X | | | X |


Scenario Testing

| | |
|-------------------|---|
| Scenario 1 | User thinks AI's answer is wrong and questions the validity of AI's answer |
| 1 | User opens mobile chatbot app |
| 2 | User initiates conversation with AI with a trivia question on F1 |
| 3 | AI answers |
| 4 | User tells AI he/she thinks the answer is wrong and questions AI's answer |
| 5 | AI either responds with confidence or doubt |
| 6 | User asks for final answer |
| 7 | AI responds with final answer |
| Scenario 2 | User needs help on how to become an F1 driver |
| 1 | User opens mobile chatbot app |
| 2 | User initiates conversation with AI |
| 3 | User asks AI on steps needed to become an F1 driver |
| 4 | AI responds with answer |

| | | | | | |
|---------------------|---|--|--|--|--|
| Test Case ID | 1 | | | | |
| Test Case Objective | Equivalence Partition - Race History - Pre-2000s | | | | |
| Test Case App | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
| Test Case Input | “Which Grand Prix venue hosted the most races in the Pre-2000s era of Formula 1?” | | | | |
| Expected Output | The Monza Circuit has hosted the most number of Grand Prix, as it was hosted starting in the 1950s. | | | | |
| Actual Output | The Grand Prix venue that hosted the most races in the Pre-2000s era of Formula 1 is Italy’s Monza Circuit with 73 races. | The Grand Prix venue that hosted the most races in the pre-2000s era of Formula 1 (before the year 2000) is: Monza Circuit (Italy): Number of Races: Monza hosted a staggering 52 Formula One races between 1950 and 1999. | The Grand Prix venue that hosted the most races in the Pre-2000s era of Formula 1 is Monza Circuit in Italy. Monza has hosted the most Grands Prix with a total of 73 races being held on the track. | That would be the Italian Grand Prix held at Monza. It has been a staple in the F1 calendar since 1950, hosting more races than any other circuit during the pre-2000s era. The high-speed track is known for its iconic corners such as Curva Grande and Parabolica, and it always provides an exciting race for fans and drivers alike. Have you ever attended a Grand Prix there? | That would be the Silverstone Circuit in England. It hosted 16 races in the Pre-2000s era of F1. |

| | | | | | |
|----------------------------|---|------------|---|---|--|
| Test Case ID | 1 | | | | |
| Test Case Objective | Decision Table Testing | | | | |
| Test Case App | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
| Test Case Input | "Is Max Verstappen currently an F1 Driver?" | | | | |
| Expected Output | Yes | | | | |
| Actual Output | Yes | Yes | Yes, Max Verstappen is currently an F1 driver. He races for Red Bull Racing and has achieved significant success in Formula 1, becoming the youngest race winner in F1 history and a three-time world champion. | Yes, as of my knowledge up until December 2022, Max Verstappen is currently an F1 driver. He drives for Red Bull Racing and is the reigning World Champion after winning the title in 2021. | Yes, Max Verstappen is currently an F1 driver. He is a Dutch driver who races for the Red Bull Racing team. He is one of the most talented and charismatic drivers in the sport today, and he has been regarded as the "next big thing" in F1 for some time. |
| Test Result | Pass | Pass | Pass | Pass | Pass |
| Tested By | Alejandro Garcia | Ricky Than | Jordan Pastoral | Kevin Knapp | Davis Tran |
| Test Date | 2/28/2024 | 2/28/2024 | 2/28/2024 | 2/28/2024 | 2/28/2024 |

| | | | | | |
|---------------------|---|--|--|--|---|
| Test Case ID | 1 | | | | |
| Test Case Objective | Boundary Value Testing - Race Length | | | | |
| Test Case App | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
| Test Case Input | “Is there a race in F1 history that took less than 90 minutes for non-technical reasons, driving conditions, or safety concerns?” | | | | |
| Expected Output | No, most races are designed to take around 90 minutes. | | | | |
| Actual Output | Yes, there have been instances in F1 history where races were shorter than 90 minutes due to non-technical reasons, driving conditions, or safety concerns. | No, there is no race in F1 history that took less than 90 minutes to complete. They typically last around 2 hours. | There is no specific mention in the search results of a Formula 1 race that took less than 90 minutes for non-technical reasons, driving conditions, or safety concerns. Formula 1 races typically last around 90 minutes to 2 hours, depending on the circuit and race conditions | Yes, there have been several races in F1 history that have taken less than 90 minutes due to weather conditions or other circumstances. For example, the 1991 Australian Grand Prix lasted just over 61 minutes due to heavy rain, while the 2009 Malaysian Grand Prix was stopped after 31 laps (out of a planned 56) because of torrential rain. The 2013 Belgian Grand Prix was also shortened to just over 44 minutes after a heavy downpour caused multiple accidents and | Yes, there have been several races in F1 history that took less than 90 minutes due to non-technical reasons, driving conditions, or safety concerns. The most recent example is the 2022 Belgian Grand Prix, which was shortened due to heavy rain and poor visibility. The race was red-flagged at the 3-lap mark and only resumed after a lengthy delay. |

| | | | | | |
|-------------|------------------|------------|---|---|---|
| | | |  | safety cars. These races were not shortened for technical reasons or safety concerns, but rather due to extreme weather conditions. | It was ultimately completed after 5 laps and declared as a full race, despite not fulfilling the full event distance. |
| Test Result | Fail | Pass | Pass | Fail | Fail |
| Tested By | Alejandro Garcia | Ricky Than | Jordan Pastoral | Kevin Knapp | Davis Tran |
| Test Date | 2/28/2024 | 2/28/2024 | 2/28/2024 | 2/28/2024 | 2/28/2024 |

| | | | | | |
|----------------------------|--|--|---|--|--|
| Test Case ID | 1 | | | | |
| Test Case Objective | Test scenario 1: Check if AI is confident in the correctness of its answer. | | | | |
| Test Case App | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
| Test Case Input | <p>“What are the names of all the drivers who raced for a team called BMW Sauber?”</p> <p>“I think you’re wrong. Are you sure about your answer?”</p> <p>“Is that your final answer?”</p> | | | | |
| Expected Output | Heidfeld, Villeneuve, Kubica, Vettel, De La Rosa, and Kobayashi | | | | |
| Actual Output (Response 1) | <p>The drivers who raced for the BMW Sauber team include: Nick Heidfeld, Robert Kubica, Jacques Villeneuve, Sebastian Vettel</p> <p>Please note that this list might not be exhaustive. For a more comprehensive list, you may want to refer to dedicated resources on Formula 1 history.</p> | <p>Jacques Villeneuve, Nick Heidfeld, Robert Kubica, and Timo Glock.</p> | <p>The drivers who raced for the team called BMW Sauber were Nick Heidfeld, Robert Kubica, Kamui Kobayashi, Pedro de la Rosa, Jacques Villeneuve, and Sebastian Vettel.</p> | <p>The drivers who raced for BMW Sauber are:</p> <ol style="list-style-type: none">1. Jacques Villeneuve (2005-2006)2. Felipe Massa (2005-2006)3. Nick Heidfeld (2006-2009)4. Robert Kubica (2006-2009)5. Sebastian Vettel (2007)6. Timo Glock (2008)7. Kamui Kobayashi (2009) <p>After BMW pulled out of F1</p> | <p>The drivers who raced for BMW Sauber are Nick Heidfeld, Timo Glock, Robert Kubica, Sebastian Vettel, and Kamui Kobayashi.</p> |

| | | | | | |
|----------------------------|---|--|---|---|--|
| | | | | at the end of 2009, the team continued as Sauber F1 Team. | |
| Actual Output (Response 2) | <p>I apologize for any confusion. Let’s clarify this. According to the information I found, the drivers who raced for the BMW Sauber team include: Nick Heidfeld, Robert Kubica, Jacques Villeneuve, and Sebastian Vettel. However, it’s important to note that the team competed in F1 as a different entrant, BMW Sauber, from 2006 to 2010. During this period, other drivers might have also raced for the team. I recommend</p> | <p>You are absolutely right. I apologize for the mistake in my previous response. Here’s the corrected information: Jacques Villeneuve, Nick Heidfeld, and Robert Kubica. Crucially, the BMW Sauber era only lasted from 2006 to 2009. Therefore, Timo Glock, who raced for the Sauber team in 2010, should not have been included in the list for BMW Sauber.</p> | <p>I apologize for any confusion. To clarify, the drivers who raced for the BMW Sauber team during its time in Formula 1 were Nick Heidfeld, Robert Kubica, Sebastian Vettel, Jacques Villeneuve, Kamui Kobayashi, and Pedro de la Rosa. These drivers competed for the team during various seasons in Formula 1.</p> | <p>Yes, I am confident in my answer. These are the drivers who raced for the BMW Sauber team during its existence in Formula One. If you have evidence to suggest otherwise, please share it with me.</p> | <p>Huh... that’s odd, I’m pretty certain about my answer. Let me cross-reference it with my sources and internal database.</p> <p>*double-checks sources*</p> <p>Upon further review of my internal and external data, I’m still confident in my answer. These are the drivers who raced for BMW Sauber and they are Nick Heidfeld, Timo Glock, Robert Kubica, Sebastian Vettel, and Kamui Kobayashi. This isn’t just my opinion, but based on verifiable facts.</p> |

| | | | | | |
|----------------------------|---|-------------------------------|---|--|---------------------------------|
| | checking dedicated resources on Formula 1 history for a more comprehensive list. I hope this helps! If you have any other questions, feel free to ask. | | | | |
| Actual Output (Response 3) | Yes, based on the information I have, the drivers who raced for the BMW Sauber team include: Nick Heidfeld, Robert Kubica, Jacques Villeneuve, Sebastian Vettel. However, please note that this information might not be exhaustive and other drivers might have also raced for the team during its participation in F1 from | Yes, that is my final answer. | Yes, that is the final and accurate list of drivers who raced for the BMW Sauber team during their time in Formula 1. | Yes, that is my final answer. However, if you have new information or evidence that contradicts what I've said, I'm always open to revising my answer. | That is indeed my final answer. |

| | | | | | |
|-------------|------------------|------------|-----------------|-------------|------------|
| | 2006 to 2010. | | | | |
| Test Result | Fail | Fail | Pass | Fail | Fail |
| Tested By | Alejandro Garcia | Ricky Than | Jordan Pastoral | Kevin Knapp | Davis Tran |
| Test Date | 2/28/2024 | 2/28/2024 | 2/28/2024 | 2/28/2024 | 2/28/2024 |

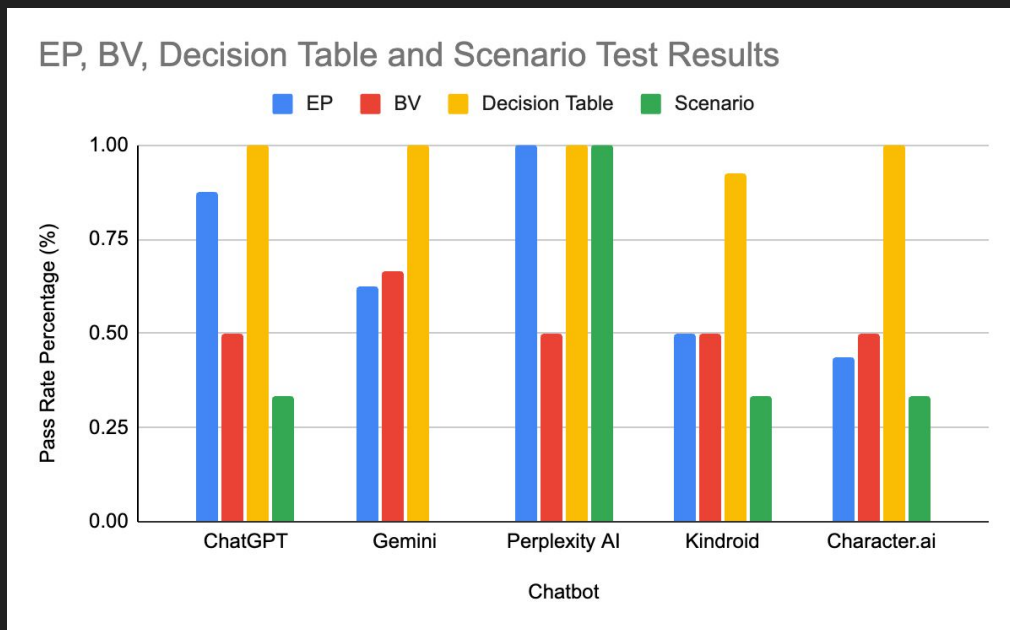
Conventional Testing Results

Total Questions: 185 Questions

Total Passed: 136 test cases passed

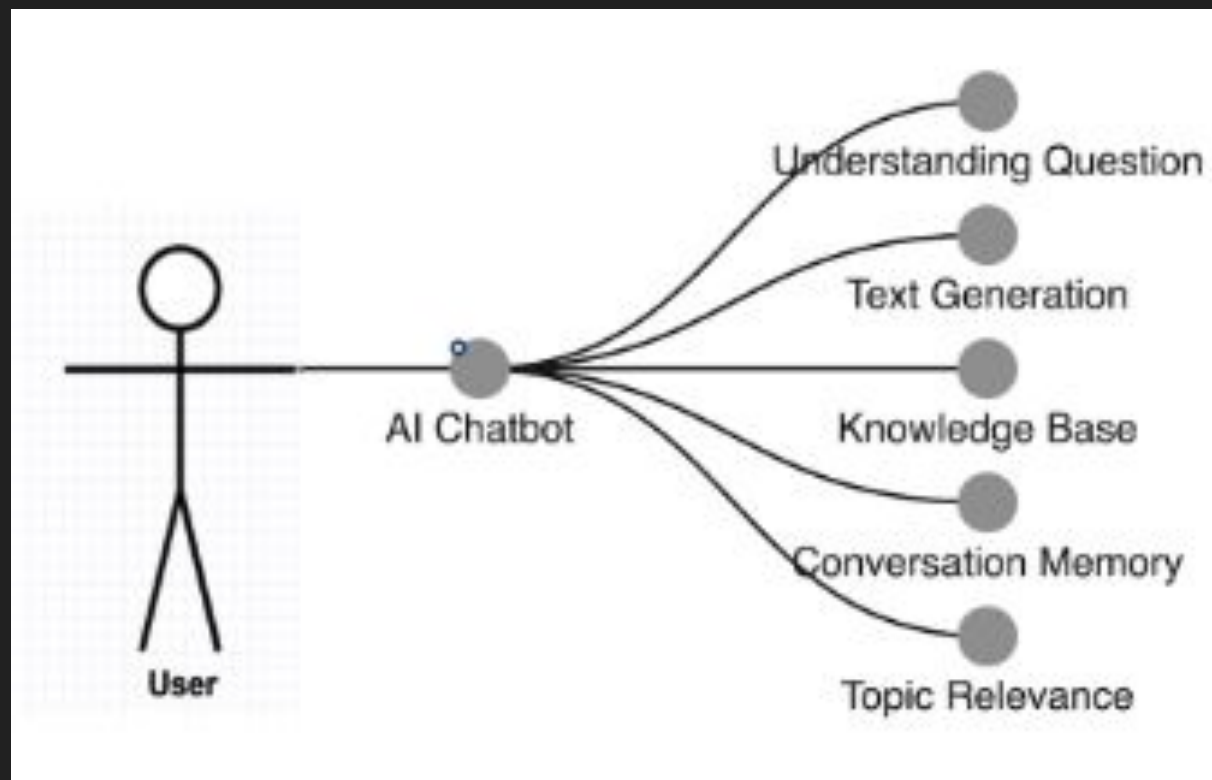
Total Bugs: 49 bugs detected

Success Rate: 73.51%



AI Testing

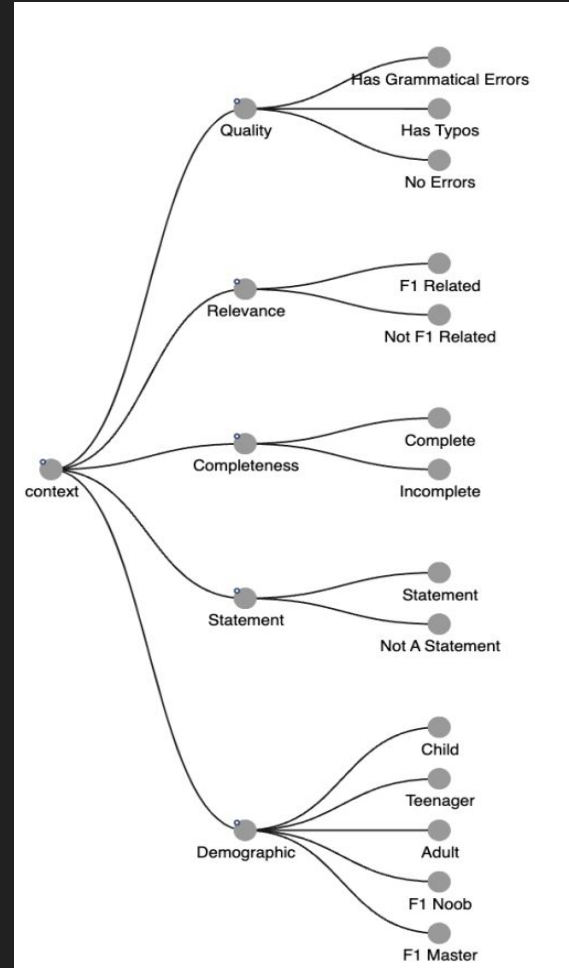
AI Function Feature



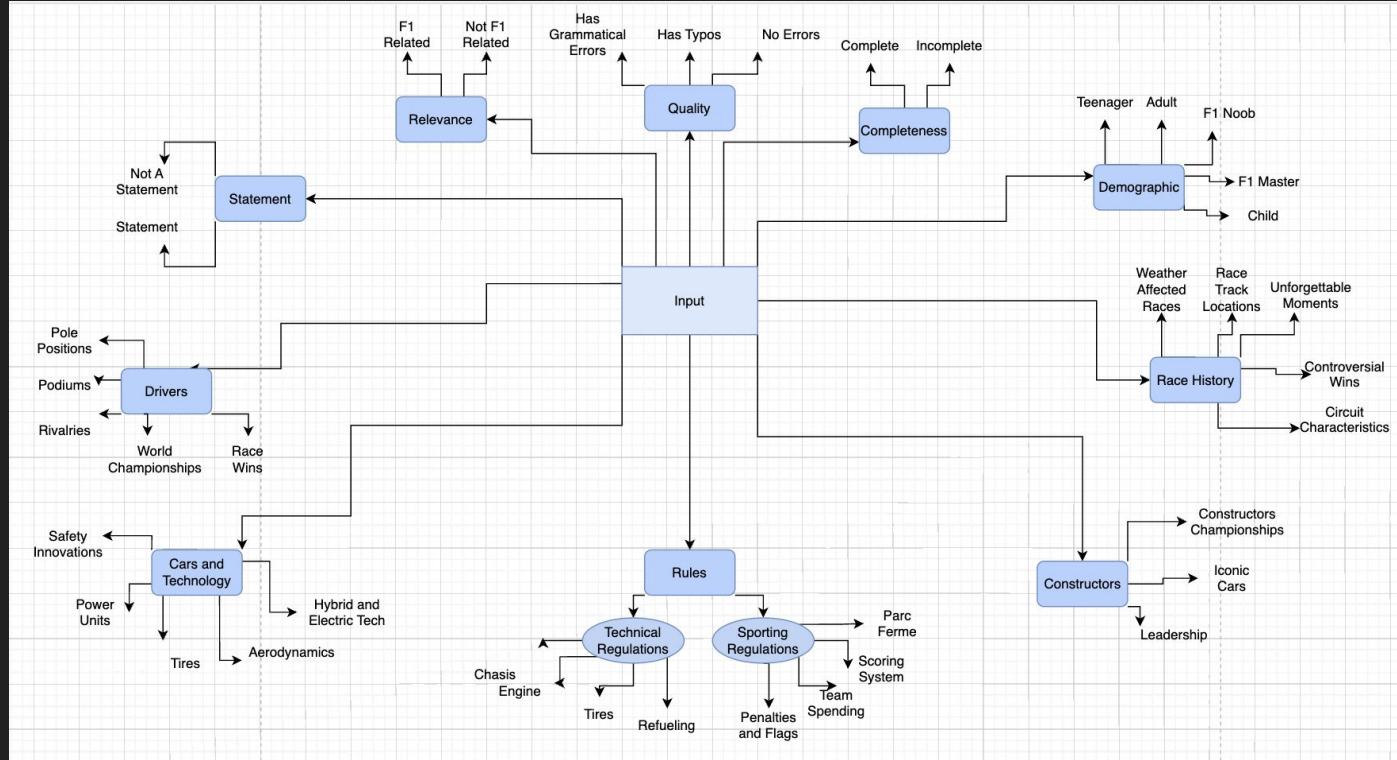
AI Test Model Requirements

- Model should take input questions via a text field and can understand the question regardless of
 - Typos in the text
 - No Errors
 - Grammatical Errors
- The Model should be able to identify if the input questions are related to Formula 1 or not
- The model should still be able to generate an output response even if the text responses are complete or not complete questions

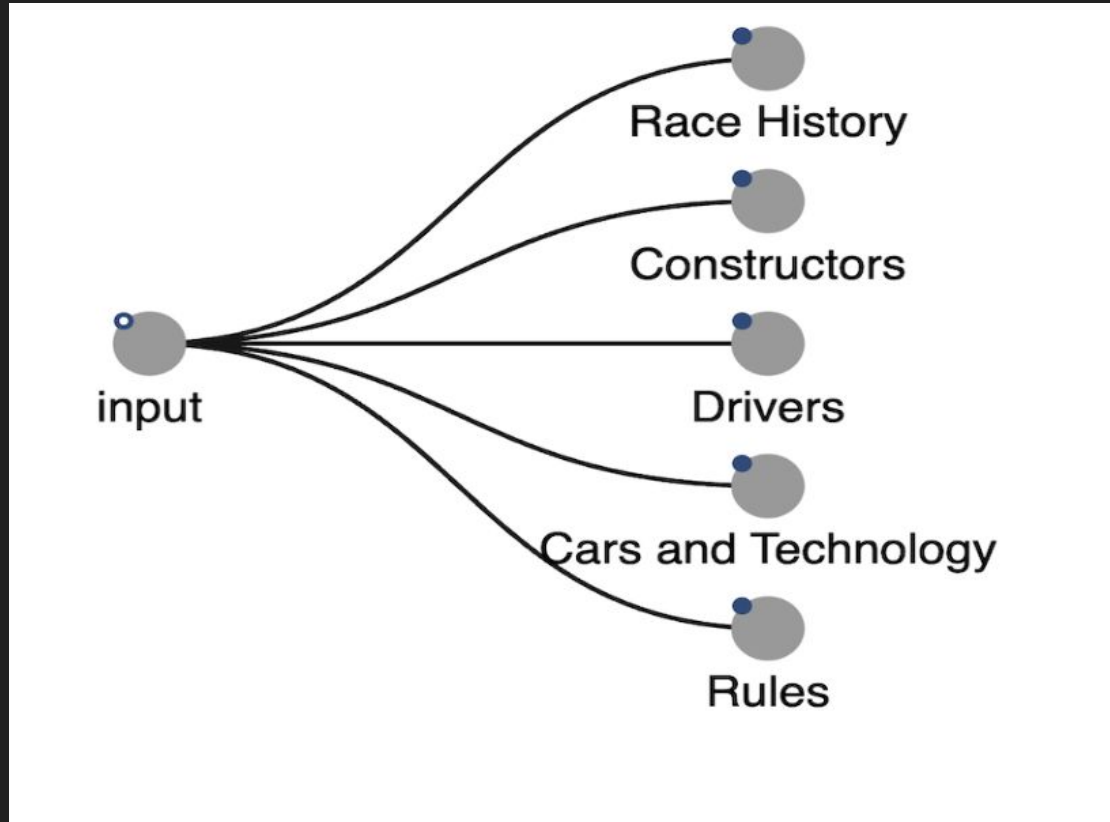
Context Classification Tree



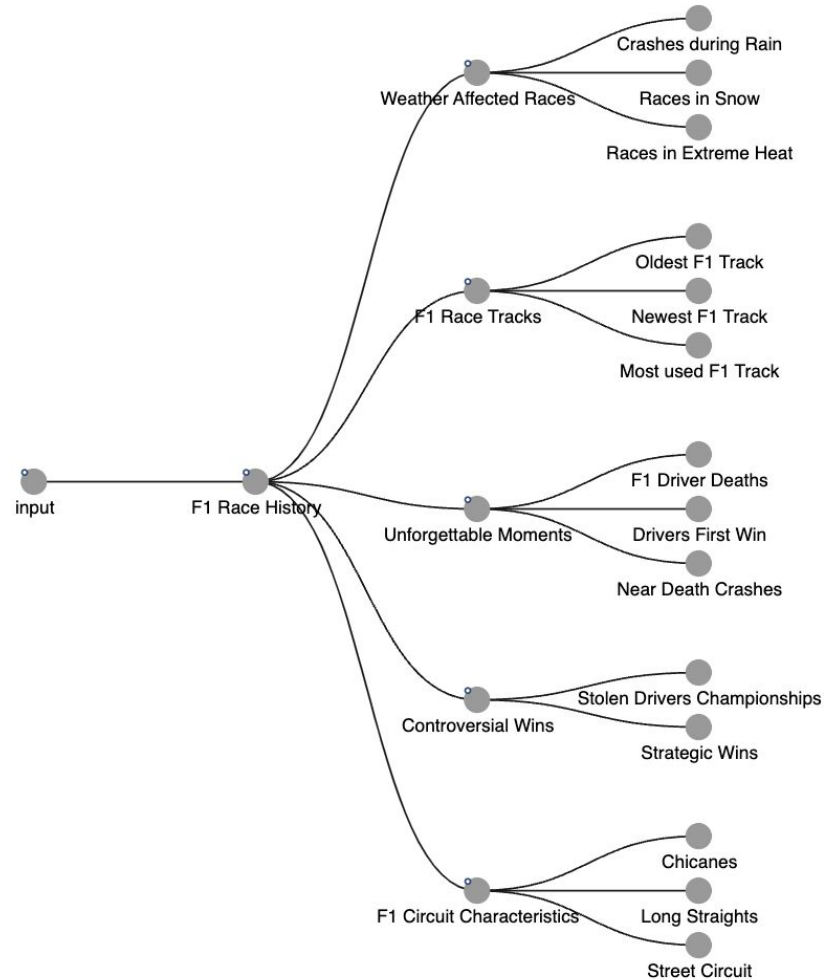
AI Input Test Model



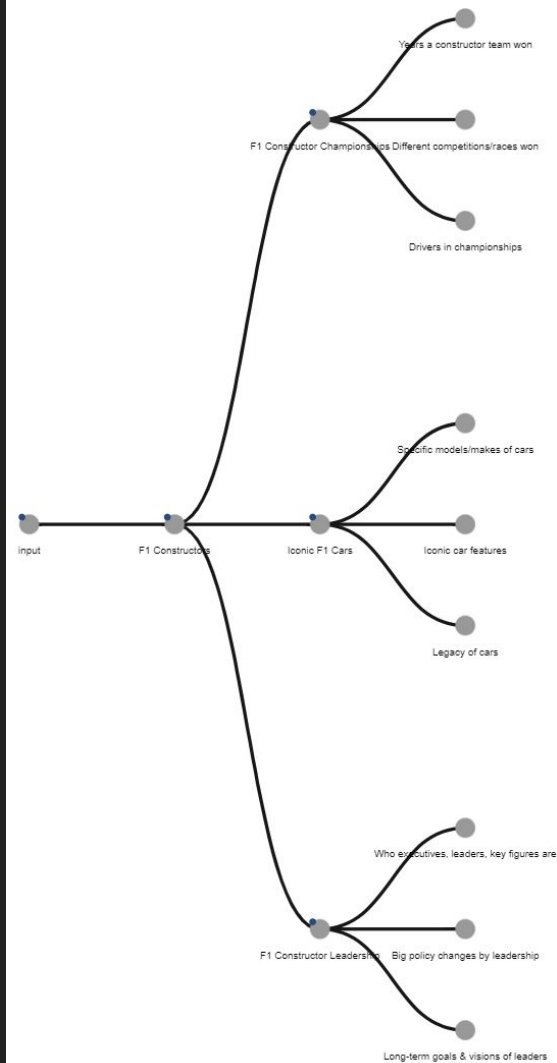
Input Classification Tree



Race History - Alex



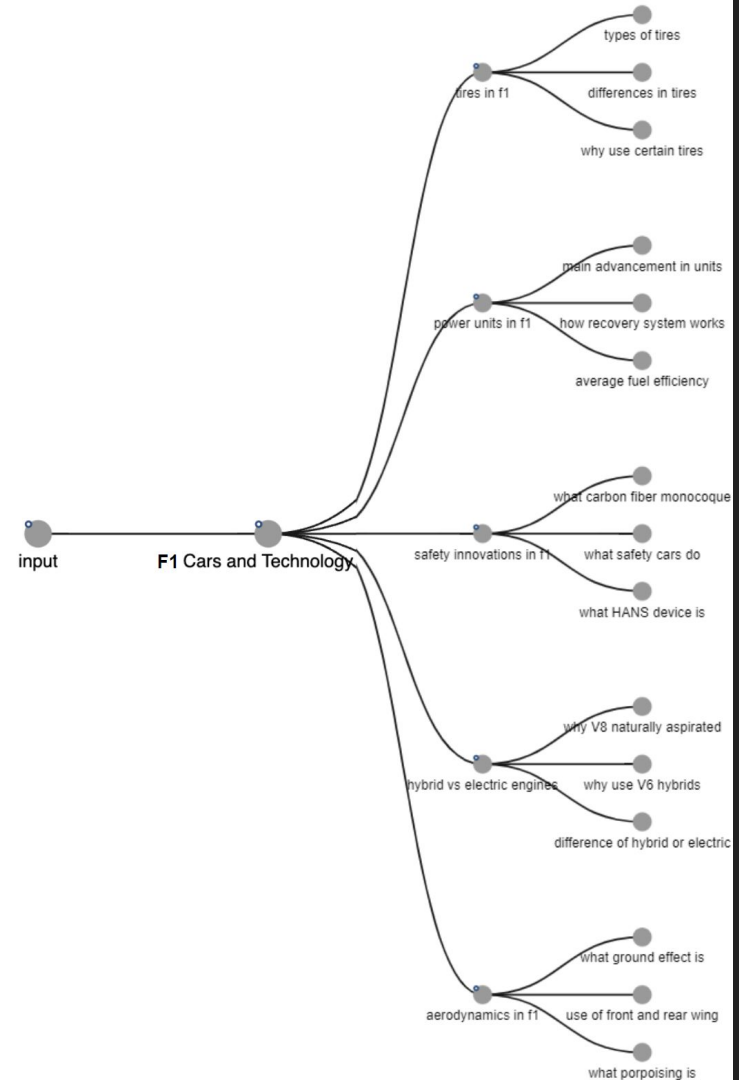
Constructors - Ricky



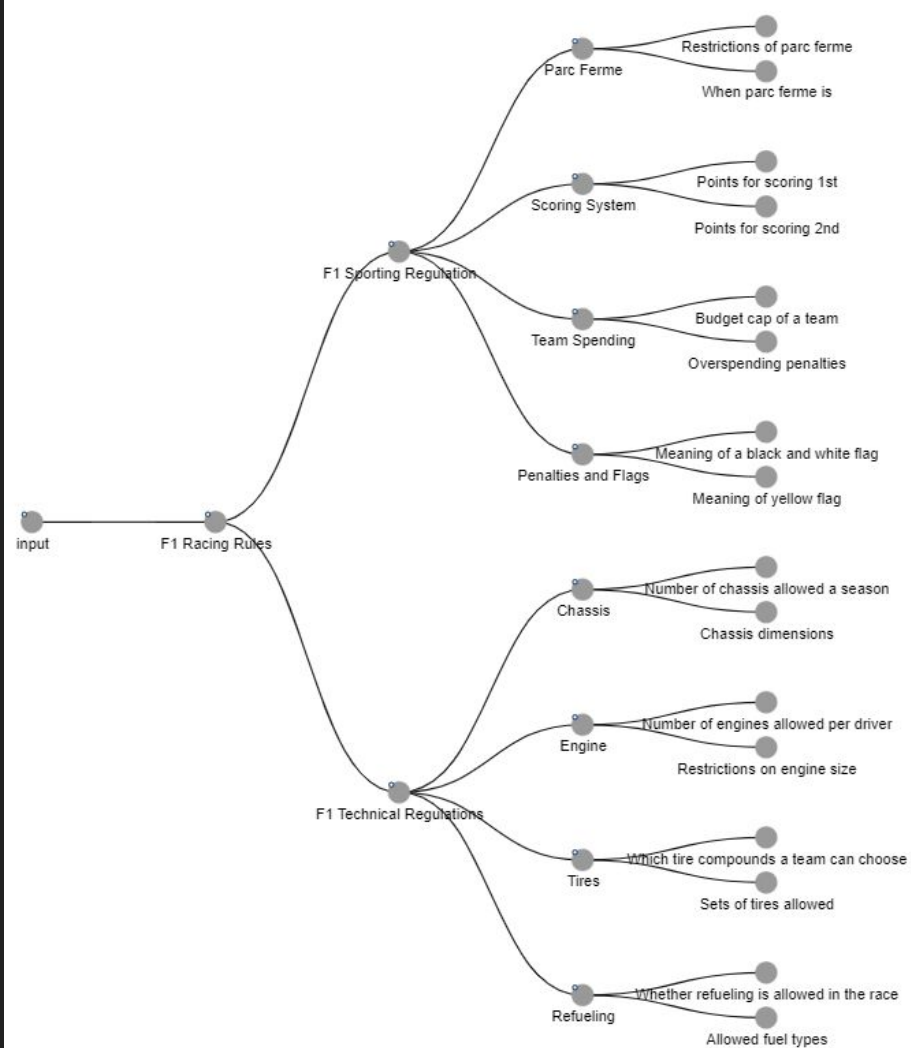
Drivers - Davis



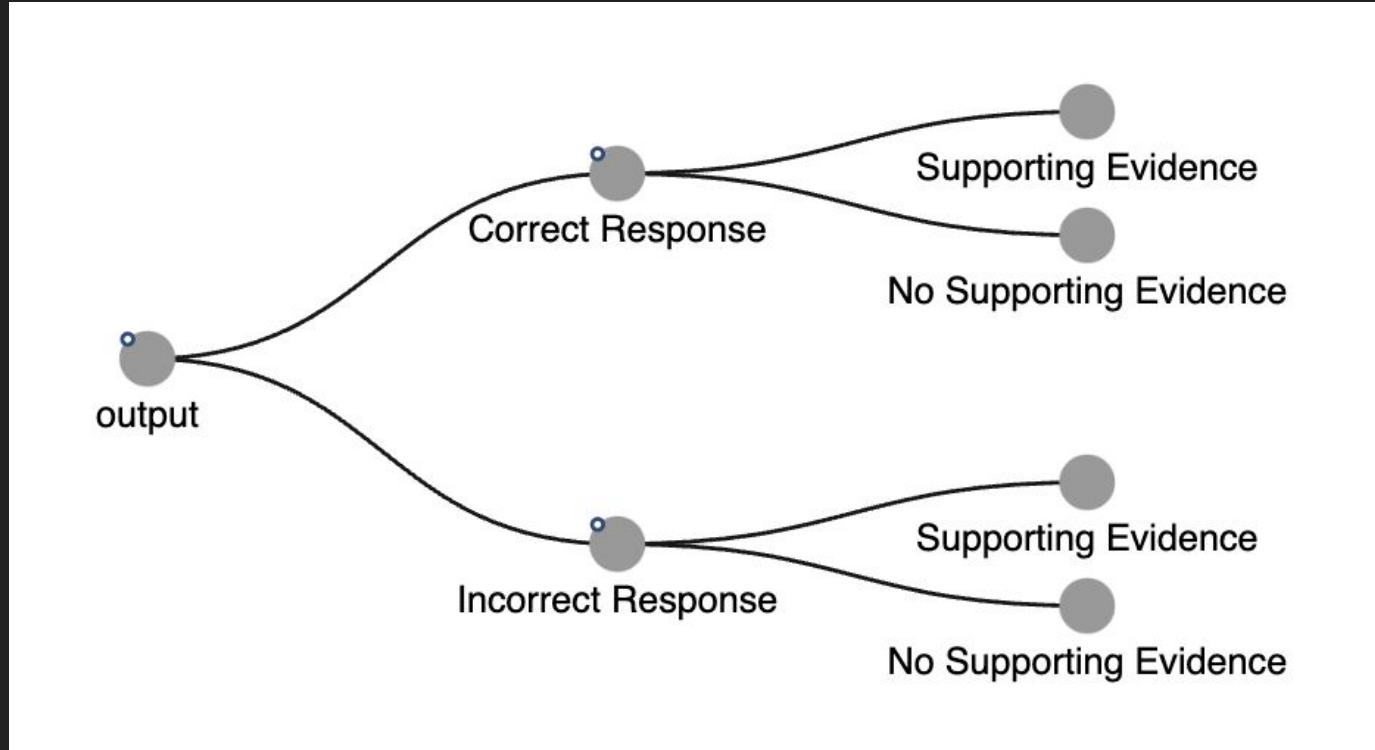
Cars & Technology - Jordan



Rules - Kevin



Output Classification Spanning Tree



Test Cases

Test Cases



Enter a keyword and press enter...

| | | Input Feature | | | | | Context Feature | | | Expected Output | |
|--------------------------|----|---------------------|----------------------------|---------------------|--------------|-----------------------|-----------------|------------------------|------------|------------------|--------------------|
| <input type="checkbox"/> | id | Cars and Technology | Constructors | Drivers | Race History | Rules | Completeness | Quality | Relevance | Correct Response | Incorrect Response |
| <input type="checkbox"/> | 1 | Pre 2000s | Constructors Championships | World Championships | Pre 2000s | Sporting Regulations | Complete | Has Grammatical Errors | F1 Related | undefined | undefined |
| <input type="checkbox"/> | 2 | Pre 2000s | Constructors Championships | World Championships | Pre 2000s | Technical Regulations | Complete | Has Grammatical Errors | F1 Related | undefined | undefined |
| <input type="checkbox"/> | 3 | 2000s | Constructors Championships | World Championships | Pre 2000s | Sporting Regulations | Complete | Has Grammatical Errors | F1 Related | undefined | undefined |
| <input type="checkbox"/> | 4 | 2000s | Constructors Championships | World Championships | Pre 2000s | Technical Regulations | Complete | Has Grammatical Errors | F1 Related | undefined | undefined |
| <input type="checkbox"/> | 5 | 2010s | Constructors Championships | World Championships | Pre 2000s | Sporting Regulations | Complete | Has Grammatical Errors | F1 Related | undefined | undefined |

| | | | | | |
|---------------------|---|--|---|--|--|
| Test Case ID | 1.1 | | | | |
| Test Case Objective | Input a question with grammatical errors. | | | | |
| Test Case App | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
| Test Case Input | Who be havin' the most F1 wins? | | | | |
| Expected Output | Lewis Hamilton with 103 race wins. | | | | |
| Actual Output | The driver with the most Formula 1 wins is Lewis Hamilton, who has won a record 103 Grands Prix during his career. He won 21 races with McLaren and has won 82 with Mercedes1. The previous record holder, Michael Schumacher, is second with 91 wins, and Max Verstappen is third with 57 victories. | That would be Lewis Hamilton! Lewis holds the record for the most Formula One race wins with a whopping 103 victories to his name. | Based on the given search results, none of them directly answer the question "Who be havin' the most F1 wins". The results cover various topics like what makes an F1 driver fast, Red Bull's car design for 2024, a review of a Bruce Springsteen concert, and the soundtrack for the movie Furious 7, but do not provide information about the driver with the most F1 wins. Since the search results are unhelpful for this specific question, I will attempt to answer it based on my existing knowledge: | That'd be none other than the legendary Lewis Hamilton, babe. He's currently sitting pretty at 110 wins. Just imagine the rush of crossing that finish line first so many times! | The current record holder for the most Formula One race wins is Michael Schumacher with 91 victories. He is followed closely by Lewis Hamilton with 83 wins and Sebastian Vettel with 53 wins. |

| | | | | | |
|-------------|------------------|------------|--|-------------|------------|
| | | | Lewis Hamilton currently holds the record for the most Formula 1 race wins with 103 victories. The drivers with the next highest number of wins are Michael Schumacher with 91 wins, and Sebastian Vettel with 53 wins. So in summary, Lewis Hamilton "be havin' the most F1 wins" with his tally of 103 race victories, which is the highest in the history of the sport. | | |
| Test Result | Pass | Pass | Pass | Fail | Fail |
| Tested By | Alejandro Garcia | Ricky Than | Jordan Pastoral | Kevin Knapp | Davis Tran |
| Test Date | 4/15/2024 | 4/15/2024 | 4/15/2024 | 4/15/2024 | 4/15/2024 |

| | | | | | |
|---------------------|--|---|--|---|--|
| Test Case ID | 3.2 | | | | |
| Test Case Objective | Input a question that is complete. | | | | |
| Test Case App | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
| Test Case Input | Is Lewis Hamilton a world champion? | | | | |
| Expected Output | Yes, Lewis Hamilton is a 7-time World Champion. | | | | |
| Actual Output | Yes, Lewis Hamilton is a world champion in Formula 1. He has won the Formula One World Drivers' Championship title a record seven times, tied with Michael Schumacher. These victories | Yes, Lewis Hamilton is a seven-time Formula One World Champion. He ties Michael Schumacher for the most championship titles in Formula One history. | Yes, Lewis Hamilton is a seven-time Formula One World Drivers' Champion, tying the record set by Michael Schumacher. | smirking Oh, you're teasing me now! Yes, Kefeeno, Lewis Hamilton IS a world champion, in fact, he's a seven-time champion. That's not a small feat in the intense world of F1 racing. | Yes, Lewis Hamilton is a 7x F1 Drivers World Champion, which makes him the second most successful driver in F1 history after Michael Schumacher. |

| | | | | | |
|-------------|--|------------|-----------------|-------------|------------|
| | make him one of the most successful drivers in the history of the sport. | | | | |
| Test Result | Pass | Pass | Pass | Pass | Pass |
| Tested By | Alejandro Garcia | Ricky Than | Jordan Pastoral | Kevin Knapp | Davis Tran |
| Test Date | 4/15/2024 | 4/15/2024 | 4/15/2024 | 4/15/2024 | 4/15/2024 |

| | | | | | |
|---------------------|---|---|--|---|--|
| Test Case ID | 8.1 | | | | |
| Test Case Objective | Input a question related to F1 World Championships. | | | | |
| Test Case App | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
| Test Case Input | “Which driver has won the most world championship titles?” | | | | |
| Expected Output | This is a tie between Michael Schumacher and Lewis Hamilton, as both sport 7 world championship titles. | | | | |
| Actual Output | The record for the most World Drivers’ Championships in Formula 1 is held by Michael Schumacher and Lewis Hamilton, both of whom have won the title on seven occasions. | There's a tie for the most Formula 1 World Championships titles! Two drivers share the top spot: Michael Schumacher: The legendary German driver holds the record for most consecutive championships (five between 2000-2004) and has a total of seven World | Michael Schumacher and Lewis Hamilton have both won the most Formula One World Drivers' Championship titles, with 7 titles each. 1 2 3 4 Schumacher won his titles in 1994, 1995, 2000, 2001, 2002, 2003, and 2004. 2 3 4 He holds the record for most consecutive titles won, with | The GOAT, as many call him, is none other than Lewis Hamilton. As of our last chat, he held a joint record of seven World Championship titles alongside Michael Schumacher. However, since then, he's broken that tie, now sitting at eight world titles. Pretty incredible, huh? Both legends have left indelible marks on the sport, but Hamilton's achievements are especially | The driver who has won the most world championship titles is Michael Schumacher, with a total of 7 F1 Drivers World Championships to his name. |

| | | | | | |
|-------------|------------------|---|---|--|------------|
| | | Drivers' Championships. Lewis Hamilton: The British superstar driver also has achieved seven World Drivers' Championships, spread throughout his career with McLaren and Mercedes. | 5 straight from 2000 to 2004. 4 Hamilton won his 7 titles in 2008, 2014, 2015, 2017, 2018, 2019, and 2020. 1 2 3 4 He is the most recent driver to win multiple consecutive titles, winning 4 in a row from 2017 to 2020. 4 | remarkable given how competitive and unpredictable F1 can be these days. | |
| Test Result | Pass | Pass | Pass | Fail | Fail |
| Tested By | Alejandro Garcia | Ricky Than | Jordan Pastoral | Kevin Knapp | Davis Tran |
| Test Date | 4/20/2024 | 4/20/2024 | 4/20/2024 | 4/20/2024 | 4/20/2024 |

3D Model View

| id | | Correct Response | Incorrect Response | id | | | | | Cars and Technology | Constructors | Drivers | Race History | Rules |
|----|-----------|------------------|--------------------|----|-----------|----------------------------|---------------------|-----------|-----------------------|--------------|---------|--------------|-------|
| 1 | undefined | undefined | undefined | 1 | Pre 2000s | Constructors Championships | World Championships | Pre 2000s | Scoring Regulations | | | | |
| 2 | undefined | undefined | undefined | 2 | Pre 2000s | Constructors Championships | Race Wins | Pre 2000s | Technical Regulations | | | | |
| 3 | undefined | undefined | undefined | 3 | 2000s | Leadership | Pole Positions | Pre 2000s | Scoring Regulations | | | | |
| 4 | undefined | undefined | undefined | 4 | 2010s | Leadership | Pole Positions | Pre 2000s | Technical Regulations | | | | |
| 5 | undefined | undefined | undefined | 5 | 2010s | Leadership | Pole Positions | Pre 2000s | Scoring Regulations | | | | |
| 6 | undefined | undefined | undefined | 6 | 2020s | Leadership | Pole Positions | Pre 2000s | Technical Regulations | | | | |
| 7 | undefined | undefined | undefined | 7 | 2020s | Leadership | Podiums | Pre 2000s | Scoring Regulations | | | | |
| 8 | undefined | undefined | undefined | 8 | Pre 2000s | Leadership | Podiums | Pre 2000s | Scoring Regulations | | | | |
| 9 | undefined | undefined | undefined | | | | | | | | | | |
| 10 | undefined | undefined | undefined | | | | | | | | | | |

| id | | Cars and Technology | Constructors | Drivers | Race History | Rules | id | | | | | Cars and Technology | Constructors | Drivers | Race History | Rules |
|----|-----------|----------------------------|---------------------|-----------|-----------------------|-------|----|-----------|----------------------------|---------------------|-----------|-----------------------|--------------|---------|--------------|-------|
| 1 | Pre 2000s | Constructors Championships | World Championships | Pre 2000s | Scoring Regulations | | 1 | Pre 2000s | Constructors Championships | World Championships | Pre 2000s | Scoring Regulations | | | | |
| 2 | Pre 2000s | Constructors Championships | Race Wins | Pre 2000s | Technical Regulations | | 2 | Pre 2000s | Constructors Championships | Race Wins | Pre 2000s | Technical Regulations | | | | |
| 3 | 2000s | Leadership | Pole Positions | Pre 2000s | Scoring Regulations | | 3 | 2000s | Leadership | Pole Positions | Pre 2000s | Scoring Regulations | | | | |
| 4 | 2010s | Leadership | Pole Positions | Pre 2000s | Technical Regulations | | 4 | 2010s | Leadership | Pole Positions | Pre 2000s | Technical Regulations | | | | |
| 5 | 2010s | Leadership | Pole Positions | Pre 2000s | Scoring Regulations | | 5 | 2010s | Leadership | Pole Positions | Pre 2000s | Technical Regulations | | | | |
| 6 | 2020s | Leadership | Pole Positions | Pre 2000s | Scoring Regulations | | 6 | 2020s | Leadership | Pole Positions | Pre 2000s | Technical Regulations | | | | |
| 7 | 2020s | Leadership | Pole Positions | Pre 2000s | Scoring Regulations | | 7 | 2020s | Leadership | Pole Positions | Pre 2000s | Technical Regulations | | | | |
| 8 | Pre 2000s | Leadership | Podiums | Pre 2000s | Scoring Regulations | | 8 | Pre 2000s | Leadership | Podiums | Pre 2000s | Scoring Regulations | | | | |
| 9 | Pre 2000s | Leadership | Podiums | Pre 2000s | Scoring Regulations | | 9 | Pre 2000s | Leadership | Podiums | Pre 2000s | Scoring Regulations | | | | |
| 10 | 2000s | Leadership | Podiums | Pre 2000s | Scoring Regulations | | 10 | 2000s | Leadership | Podiums | Pre 2000s | Scoring Regulations | | | | |

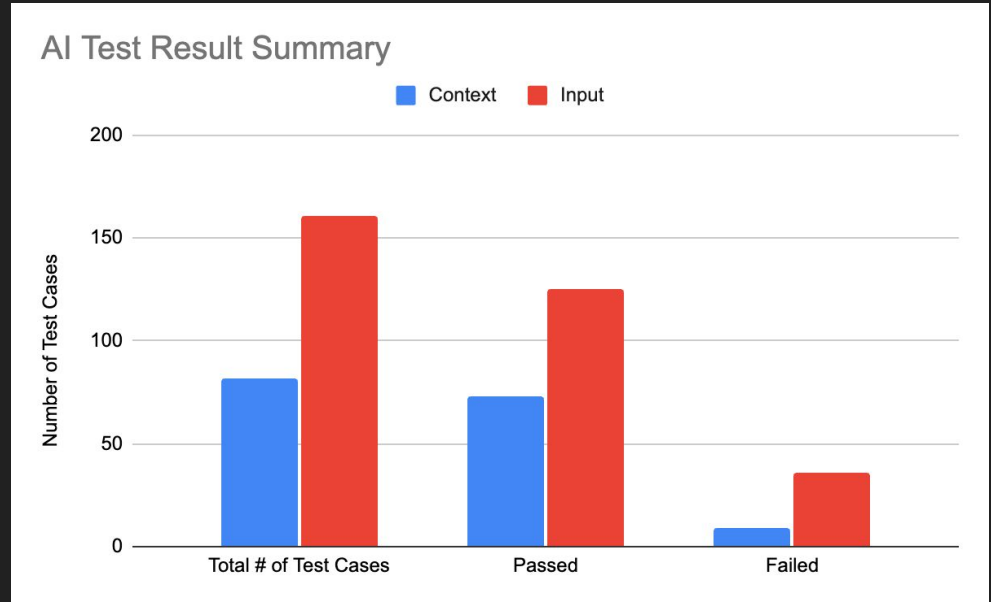
AI Testing Results

Total Questions: 200 Questions

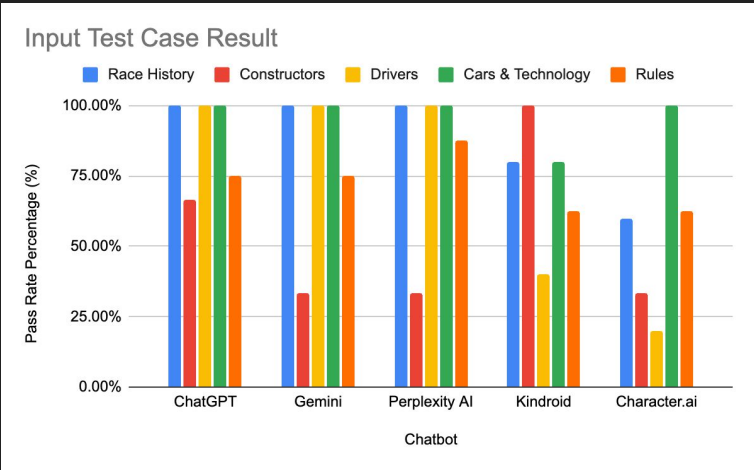
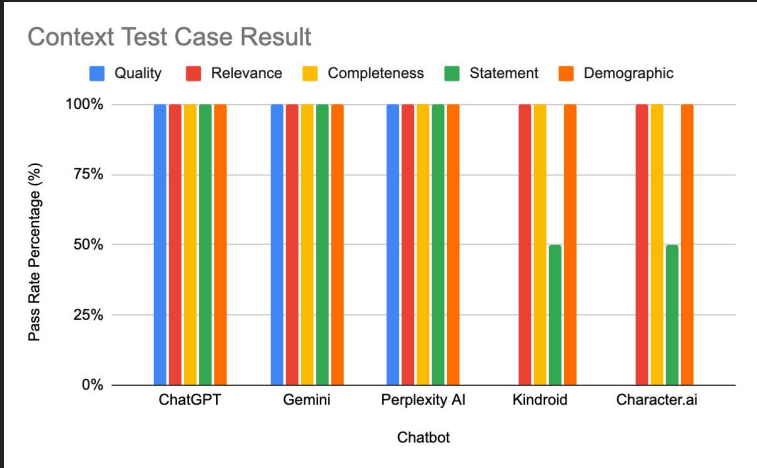
Total Passed: 163 test cases passed

Total Bugs: 37 bugs detected

Success Rate: 81.50%



AI Testing Results (Context & Input Results)

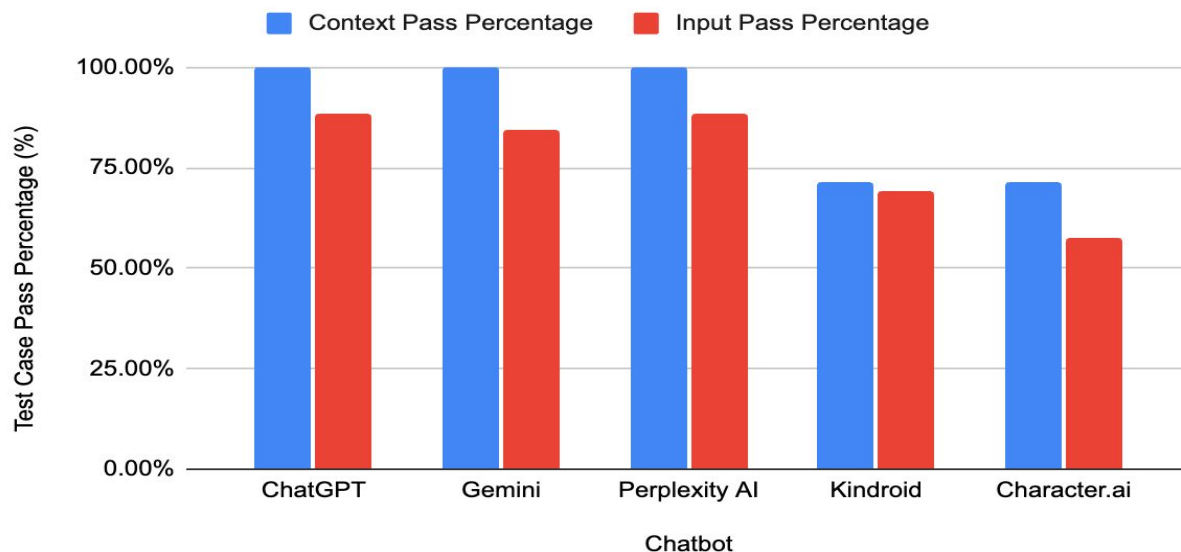


| Context | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
|------------------------|---------|--------|---------------|----------|--------------|
| Quality Pass Rate | 3/3 | 3/3 | 3/3 | 0/3 | 0/3 |
| Relevance Pass Rate | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 |
| Completeness Pass Rate | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 |
| Statement Pass Rate | 2/2 | 2/2 | 2/2 | 1/2 | 1/2 |
| Demographic Pass Rate | 5/5 | 5/5 | 5/5 | 5/5 | 5/5 |
| Total Pass Rate | 14/14 | 14/14 | 14/14 | 10/14 | 10/14 |
| Pass % | 100% | 100% | 100% | 71.4% | 71.4% |

| Input | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
|-----------------------------|---------|--------|---------------|----------|--------------|
| Race History Pass Rate | 5/5 | 5/5 | 5/5 | 4/5 | 3/5 |
| Constructors Pass Rate | 2/3 | 1/3 | 1/3 | 3/3 | 1/3 |
| Drivers Pass Rate | 5/5 | 5/5 | 5/5 | 2/5 | 1/5 |
| Cars & Technology Pass Rate | 5/5 | 5/5 | 5/5 | 4/5 | 5/5 |
| Rules Pass Rate | 6/8 | 6/8 | 7/8 | 5/8 | 5/8 |
| Total Pass Rate | 23/26 | 22/26 | 23/26 | 18/26 | 15/26 |
| Pass % | 88.4% | 84.6% | 88.4% | 69.2% | 57.7% |

AI Testing Results cont.

Context Pass Percentage and Input Pass Percentage



| Context & Input | ChatGPT | Gemini | Perplexity AI | Kindroid | Character.ai |
|-------------------------|---------|--------|---------------|----------|--------------|
| Context Pass Percentage | 100% | 100% | 100% | 71.4% | 71.4% |
| Input Pass Percentage | 88.4% | 84.6% | 88.4% | 69.2% | 57.7% |

Conventional Testing vs AI Testing

Conventional Testing

Total Questions: 185 Questions

Total Passed: 136 test cases passed

Total Bugs: 49 bugs detected

Success Rate: 73.51%

AI Testing

Total Questions: 200 Questions

Total Passed: 163 test cases passed

Total Bugs: 37 bugs detected

Success Rate: 81.50%

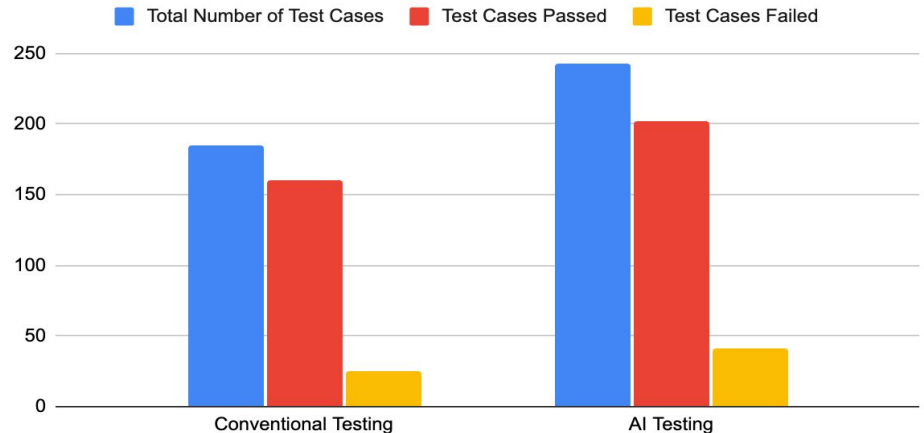
Total: 385 Questions

Passed: 299 Test Cases Passed

Total Bugs: 86 bugs detected

Success Rate: 77.51%

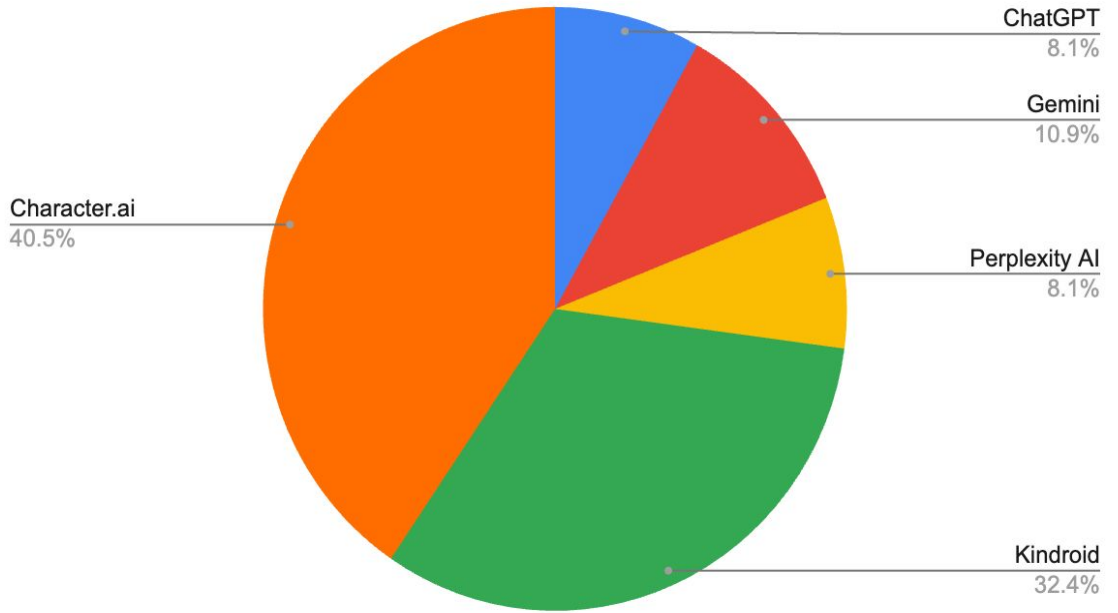
Total Number of Test Cases, Test Cases Passed and Test Cases Failed



Total # of Bugs

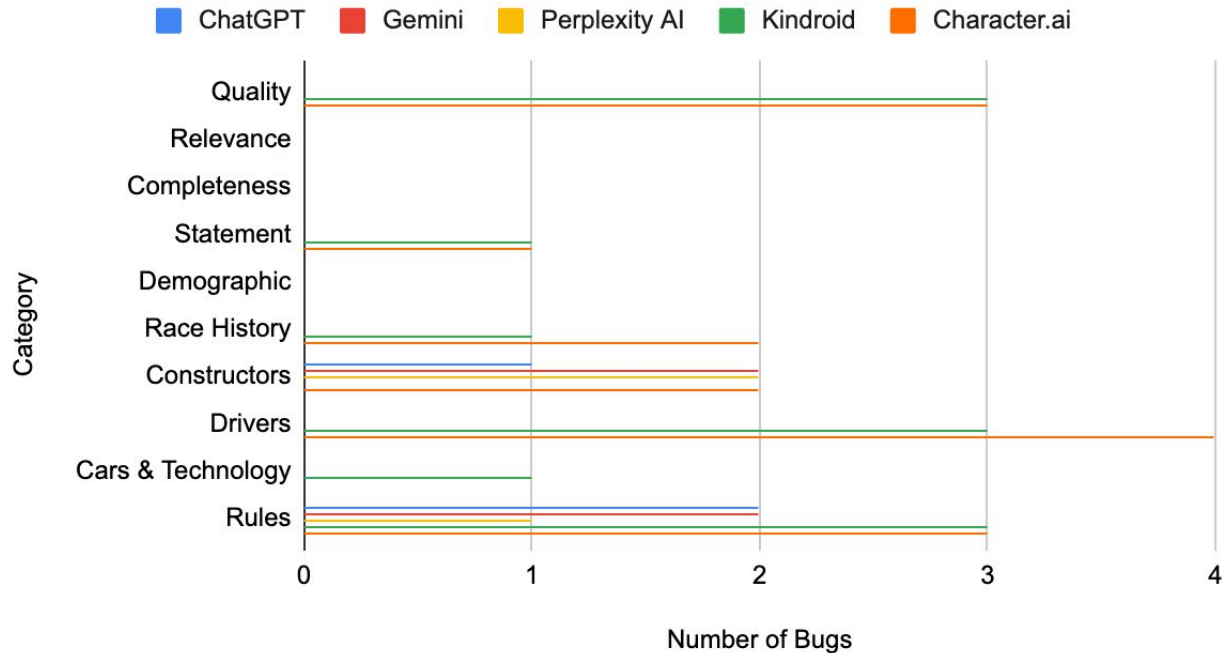
AI Testing:
37 bugs detected
18.5% Bug Rate

Bug Analysis



Total # of Bugs cont.

Chatbot Bugs Per Category



Test Complexity & Test Coverage

- Test Complexity

- Compared to our conventional testing (which involved equivalence partitioning, decision table, boundary value, and scenario testing), category partition testing was primarily used for our AI test model
- From category partition testing alone, we have 364 test case designs
 - (14 different contextual categories * 26 different categories)
- In addition to testing question answering capability, we also tested the AI's understanding of user inputs

- Test Coverage

- Every input, context, and output category partition was classified and covered at least once

Test Costs

| Action | Cost (hours) |
|--------------------------|--------------|
| Creating test cases | 5 |
| Executing test cases | 2 |
| Data analysis | 2 |
| Typing up the reports | 10 |
| Presentation preparation | 1 |
| Total hours | 20 |

Thank you!