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"When Logic Changes: Exploring Non-Monotonic Reasoning and Argumentation"

Part I. Conceptual Understanding

1. **Define non-monotonic reasoning in your own words.**
   - Non-Monotonic Reasoning refers to assumptions or reasoning that changes when new facts or knowledge are added. It's similar to fact checking where you have a claim and validate it which can change your conclusion.
2. **How does non-monotonic reasoning differ from monotonic reasoning?**
   - Monotonic Reasoning refers to given facts and knowledge that cannot be changed. Once something is true, it remains true even when new facts are added. In contrast, Non-Monotonic Reasoning are unproven facts that remain unchecked until proven with new information. The two reasons differ from each other as the former does not change its claims once new knowledge is added compared to the latter where it changes its claims based on the newly added information.
3. **Give a real-life situation where a conclusion must change after new information is added.**
   - A real-life situation that often happens in real-life is when browsing through social media like Facebook and you stumble upon a post where it indicates that there are no classes in the upcoming day. However, once you verify the dates when it was indicated, your conclusion changes. This scenario is an example of Non-Monotonic Reasoning as your first claim was that there were no classes. However, once you've fact-checked the details (adding new information), your claim was changed and concluded that the post was false information.
4. **What is the default rule? Provide one example.**
   - The Default Rule or Logic refers to assumptions that something is true unless proven otherwise. This is similar to Non-Monotonic Reasoning; it deals with arguments/assumptions where the conclusion changes based on the newly added information. An example is that all birds can fly, this is the assumption, however, it is proven that not all birds can fly as certain animals that are considered as birds like penguins and ostriches do not fly.
5. **How do argumentation frameworks help AI systems decide between conflicting rules?**
   - In a real-life scenario, various arguments tend to conflict. Argumentation Frameworks aid in these situations as it helps Artificial Intelligence create better reasonings and conclusions by siding on arguments that are better proven. Basically, it supports claims that have better literatures that support that argument.