# Deep Learning
project 3 - part-1

**prompt -1:**

In this task, you're required to generate a JSON-formatted task tree for preparing a specific dish using a given set of ingredients. The dish name and required ingredients are provided, along with a list of items available in your kitchen. Your objective is to create a step-by-step task tree outlining the process of preparing the dish using only the ingredients present in the kitchen. If any required ingredients are missing, you should suggest alternatives whenever possible.

To accomplish this task, you'll need to adhere to the provided JSON format, ensuring that each step in the task tree includes input nodes, motion nodes (actions), and output nodes. In case of missing ingredients, your task is to either suggest alternatives or return an error message in the specified JSON structure. The error structure should consist of a JSON object with the key "error" indicating that the ingredients are not available.

Here's an example of the JSON structure to be followed for both the task tree and the error message:

Error Structure:

**[{"error":"Ingredients are not available"}]**

Object Structure:
```
[
 {
   "input_nodes": [
    {
     "label": "[Label of Input Node]",
     "states": ["[State of Input Node]"],
     "ingredients": [],
     "container": "[Container]"
    }
   ],
   "motion_node": "[Motion]",
   "output_nodes": [
    {
     "label": "[Label of Output Node]",
     "states": ["[State of Output Node]"],
     "ingredients": ["[Ingredient 1]", "[Ingredient 2]", ...],
     "container": "[Container]"
    }
   ]
 }
]
```

The above prompt is a direct prompt.

Upon running the prompt, I observed that a majority of the JSON objects were constructed with ingredients that were not readily available in the kitchen. Specifically, out of the 32 JSON files, only 12 of them appeared to be correct. This indicates an accuracy rate of approximately 47%.

Prompt-2:

To address the issue of missing ingredients in some JSON files, a step-by-step prompt was implemented to provide detailed instructions. Despite this solution, however, an additional challenge arose when several JSON files were found to contain incorrect ingredients. In some instances, the program suggested non-vegetarian options for completely vegetarian dishes instead of suitable substitutes when ingredients were missing. This matter requires further attention to ensure that the program provides accurate and appropriate suggestions for missing ingredients in all cases, including those for vegetarian dishes. When I ran this prompt I got 75 % accuracy.

**Title**: Generate Task Tree (JSON) for Dish Preparation - Broken Down
**Description**: The required ingredients to prepare **[name of the dish]** are: **[list of ingredients]**.
Create a task tree for preparing **[name of the dish]** using the following ingredients available in the kitchen**: <kitchen>.**
If any necessary items are not present, suggest alternatives if available. If alternatives are not available, return the output as [{"error":"Ingredients are not available"}] indicate that the ingredients are not available.Provide instructions in the following JSON format.please make sure to return in same json structure.don't give dish name and ingredients in the output:

make sure every ingredient using to prepare a dish should be present in kitchen
Dish Name:[name of the dish]
Ingredients: [list of ingredients]
available kitchen items: <kitchen>
Object Structure:
JSON

```
[
 {
   "input_nodes": [
    {
     "label": "[Label of Input Node]",
     "states": ["[State of Input Node]"],
     "ingredients": [],
     "container": "[Container]"
    },
    ...
   ],
   "motion_node": "[Motion]",
   "output_nodes": [
    {
     "label": "[Label of Output Node]",
```

```
      "states": ["[State of Output Node]"],
      "ingredients": ["[Ingredient 1]", "[Ingredient 2]", ...],
      "container": "[Container]"
    },
    ...
   ]
 }
]
```

Please ensure the output for each step includes all necessary information for completing that step.

make sure to return output in same structure. if it is lengthy return optimal output.

example 1:

Step 1:

> Gather Ingredients: The task tree includes a motion node "gather" to gather the spinach, but it doesn't specify which ingredients are needed, which is essential based on the text instructions.
> Rinse and Dry Missing: The task tree doesn't include a step for rinsing and drying the spinach, which is mentioned in the text.

Step 2:

> Place in Bowl Missing: The task tree should include a step to place the rinsed and dried spinach in a bowl, which is mentioned in the text.

Step 3:

> Add Sliced Strawberries: The task tree correctly includes a step to add sliced strawberries to the bowl.

Step 4:

> Add Halved Orange Slices: The task tree correctly includes a step to add halved orange slices to the bowl.

Step 5:

> Add Sliced Olives and Chopped Nuts: The task tree correctly includes a step to add sliced olives and chopped nuts to the bowl.

Step 6:

> Drizzle with Honey: The task tree correctly includes a step to drizzle thick honey sauce over the salad.

Step 7:

> Add Thick Mustard Sauce: The task tree correctly includes a step to add thick mustard sauce to the salad.

Step 8:

> Add Liquid Oil: The task tree correctly includes a step to add liquid oil to the salad.

Step 9:

> Toss Ingredients: The task tree correctly includes a step to toss the ingredients together until everything is well-coated.

Step 10:

> Serve and Enjoy: The task tree doesn't explicitly include a step to serve and enjoy the salad, which is typically the final step in a recipe. However, this can be assumed as the concluding action.

Expected Output:

```
[
 {
   "input_nodes": [
```

```json
  {
    "label": "spinach",
    "states": ["leaf"],
    "ingredients": [],
    "container": null
  },
  {
    "label": "strawberry",
    "states": ["sliced"],
    "ingredients": [],
    "container": null
  },
  {
    "label": "orange",
    "states": ["halved"],
    "ingredients": [],
    "container": null
  },
  {
    "label": "olive",
    "states": ["sliced"],
    "ingredients": [],
    "container": null
  },
  {
    "label": "nut",
    "states": ["halved"],
    "ingredients": [],
    "container": null
  },
  {
    "label": "honey",
    "states": ["liquid"],
    "ingredients": [],
    "container": null
  },
  {
    "label": "mustard",
    "states": ["liquid"],
    "ingredients": [],
    "container": null
  },
  {
    "label": "liquid",
    "states": ["oil"],
```

```json
      "ingredients": [],
      "container": null
    }
  ],
  "motion_node": "gather",
  "output_nodes": [
    {
      "label": "spinach",
      "states": ["leaf"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "strawberry",
      "states": ["sliced"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "orange",
      "states": ["halved"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "olive",
      "states": ["sliced"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "nut",
      "states": ["halved"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "honey",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "mustard",
      "states": ["liquid"],
```

```
      "ingredients": [],
      "container": null
    },
    {
      "label": "oil",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    }
  ]
},
{
  "input_nodes": [
    {
      "label": "spinach",
      "states": ["leaf"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "strawberry",
      "states": ["sliced"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "orange",
      "states": ["halved"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "olive",
      "states": ["sliced"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "nut",
      "states": ["halved"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "honey",
```

```json
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "mustard",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "liquid",
      "states": ["oil"],
      "ingredients": [],
      "container": null
    }
  ],
  "motion_node": "rinse-and-dry",
  "output_nodes": [
    {
      "label": "spinach",
      "states": ["leaf"],
      "ingredients": [],
      "container": null
    }
  ]
},
{
  "input_nodes": [
    {
      "label": "spinach",
      "states": ["leaf"],
      "ingredients": [],
      "container": null
    }
  ],
  "motion_node": "place",
  "output_nodes": [
    {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach"],
      "container": null
    }
  ]
```

```
    },
    {
      "input_nodes": [
        {
          "label": "strawberry",
          "states": ["sliced"],
          "ingredients": [],
          "container": null
        }
      ],
      "motion_node": "add",
      "output_nodes": [
        {
          "label": "bowl",
          "states": [],
          "ingredients": ["spinach", "strawberry"],
          "container": null
        }
      ]
    },
    {
      "input_nodes": [
        {
          "label": "orange",
          "states": ["halved"],
          "ingredients": [],
          "container": null
        }
      ],
      "motion_node": "add",
      "output_nodes": [
        {
          "label": "bowl",
          "states": [],
          "ingredients": ["spinach", "strawberry", "orange"],
          "container": null
        }
      ]
    },
    {
      "input_nodes": [
        {
          "label": "olive",
          "states": ["sliced"],
          "ingredients": [],
```

```json
      "container": null
     }
    ],
    "motion_node": "add",
    "output_nodes": [
     {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive"],
      "container": null
     }
    ]
   },
   {
    "input_nodes": [
     {
      "label": "nut",
      "states": ["halved"],
      "ingredients": [],
      "container": null
     }
    ],
    "motion_node": "add",
    "output_nodes": [
     {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive", "nut"],
      "container": null
     }
    ]
   },
   {
    "input_nodes": [
     {
      "label": "honey",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
     }
    ],
    "motion_node": "add",
    "output_nodes": [
     {
      "label": "bowl",
```

```json
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey"],
      "container": null
    }
  ]
},
{
  "input_nodes": [
    {
      "label": "mustard",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    }
  ],
  "motion_node": "add",
  "output_nodes": [
    {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey", "mustard"],
      "container": null
    }
  ]
},
{
  "input_nodes": [
    {
      "label": "liquid",
      "states": ["oil"],
      "ingredients": [],
      "container": null
    }
  ],
  "motion_node": "add",
  "output_nodes": [
    {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey", "mustard", "oil"],
      "container": null
    }
  ]
},
{
```

```
  "input_nodes": [
   {
    "label": "bowl",
    "states": [],
    "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey", "mustard", "oil"],
    "container": null
   }
  ],
  "motion_node": "toss",
  "output_nodes": [
   {
    "label": "bowl",
    "states": ["mixed"],
    "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey", "mustard", "oil"],
    "container": null
   }
  ]
 }
]
```

Prompt -3:

For prompt 2, I updated the instruction properly like a contextual prompt. When I ran I got more accuracy than another prompt which is almost 95% accuracy.


Title: Generate Task Tree (JSON) for Dish Preparation - Broken Down

Description: You've been tasked with creating a JSON-formatted task tree for preparing a dish using specific ingredients. The dish name and required ingredients are specified below. Use the ingredients available in the kitchen. If any necessary ingredients are missing, suggest alternatives if possible. If no alternatives are available, return an error indicating that the ingredients are not available.

Objective: Develop a JSON task tree for preparing the specified dish using only the ingredients available in the kitchen.

Scenario: You're preparing a dish called [name of the dish]. The required ingredients for this dish are [list of ingredients]. Your kitchen is stocked with the following items: <kitchen>. Your goal is to create a task tree outlining the step-by-step process of preparing the dish using the available ingredients. If any required ingredients are missing, use alternatives present in the kitchen (e.g., using honey instead of sugar). If a vegetable ingredient is missing, use another alternative vegetable ingredient, and vice versa.

Instructions:
* Use the provided JSON format to outline the task tree for preparing the dish.
* Ensure each step in the task tree includes input nodes, motion nodes (actions), and output nodes.
* If any ingredients are unavailable, suggest alternatives if possible. If not, handle the situation appropriately.
* Return the output in the specified JSON structure.

Error Structure:
```
[{"error":"Ingredients are not available"}]
```

Object Structure:
```
[
 {
   "input_nodes": [
    {
     "label": "[Label of Input Node]",
     "states": ["[State of Input Node]"],
     "ingredients": [],
     "container": "[Container]"
    },
    …
   ],
   "motion_node": "[Motion]",
   "output_nodes": [
    {
     "label": "[Label of Output Node]",
     "states": ["[State of Output Node]"],
     "ingredients": ["[Ingredient 1]", "[Ingredient 2]", …],
     "container": "[Container]"
    },
    …
   ]
 }
]
```

Example:
Below is an example demonstrating how to structure the task tree for preparing the dish:
```
[
 {
   "input_nodes": [
    {
     "label": "spinach",
     "states": ["leaf"],
     "ingredients": [],
     "container": null
    },
    {
     "label": "strawberry",
     "states": ["sliced"],
     "ingredients": [],
     "container": null
```

    },
    {
      "label": "orange",
      "states": ["halved"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "olive",
      "states": ["sliced"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "nut",
      "states": ["halved"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "honey",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "mustard",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "liquid",
      "states": ["oil"],
      "ingredients": [],
      "container": null
    }
  ],
  "motion_node": "gather",
  "output_nodes": [
    {
      "label": "spinach",
      "states": ["leaf"],
      "ingredients": [],
      "container": null

```
      },
      {
        "label": "strawberry",
        "states": ["sliced"],
        "ingredients": [],
        "container": null
      },
      {
        "label": "orange",
        "states": ["halved"],
        "ingredients": [],
        "container": null
      },
      {
        "label": "olive",
        "states": ["sliced"],
        "ingredients": [],
        "container": null
      },
      {
        "label": "nut",
        "states": ["halved"],
        "ingredients": [],
        "container": null
      },
      {
        "label": "honey",
        "states": ["liquid"],
        "ingredients": [],
        "container": null
      },
      {
        "label": "mustard",
        "states": ["liquid"],
        "ingredients": [],
        "container": null
      },
      {
        "label": "oil",
        "states": ["liquid"],
        "ingredients": [],
        "container": null
      }
    ]
  },
```

```json
{
  "input_nodes": [
    {
      "label": "spinach",
      "states": ["leaf"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "strawberry",
      "states": ["sliced"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "orange",
      "states": ["halved"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "olive",
      "states": ["sliced"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "nut",
      "states": ["halved"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "honey",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    },
    {
      "label": "mustard",
      "states": ["liquid"],
      "ingredients": [],
      "container": null
    },
    {
```

```
        "label": "liquid",
        "states": ["oil"],
        "ingredients": [],
        "container": null
      }
    ],
    "motion_node": "rinse-and-dry",
    "output_nodes": [
      {
        "label": "spinach",
        "states": ["leaf"],
        "ingredients": [],
        "container": null
      }
    ]
  },
  {
    "input_nodes": [
      {
        "label": "spinach",
        "states": ["leaf"],
        "ingredients": [],
        "container": null
      }
    ],
    "motion_node": "place",
    "output_nodes": [
      {
        "label": "bowl",
        "states": [],
        "ingredients": ["spinach"],
        "container": null
      }
    ]
  },
  {
    "input_nodes": [
      {
        "label": "strawberry",
        "states": ["sliced"],
        "ingredients": [],
        "container": null
      }
    ],
    "motion_node": "add",
```

```
    "output_nodes": [
     {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry"],
      "container": null
     }
    ]
   },
   {
    "input_nodes": [
     {
      "label": "orange",
      "states": ["halved"],
      "ingredients": [],
      "container": null
     }
    ],
    "motion_node": "add",
    "output_nodes": [
     {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange"],
      "container": null
     }
    ]
   },
   {
    "input_nodes": [
     {
      "label": "olive",
      "states": ["sliced"],
      "ingredients": [],
      "container": null
     }
    ],
    "motion_node": "add",
    "output_nodes": [
     {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive"],
      "container": null
     }
```

```
      ]
    },
    {
      "input_nodes": [
        {
          "label": "nut",
          "states": ["halved"],
          "ingredients": [],
          "container": null
        }
      ],
      "motion_node": "add",
      "output_nodes": [
        {
          "label": "bowl",
          "states": [],
          "ingredients": ["spinach", "strawberry", "orange", "olive", "nut"],
          "container": null
        }
      ]
    },
    {
      "input_nodes": [
        {
          "label": "honey",
          "states": ["liquid"],
          "ingredients": [],
          "container": null
        }
      ],
      "motion_node": "add",
      "output_nodes": [
        {
          "label": "bowl",
          "states": [],
          "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey"],
          "container": null
        }
      ]
    },
    {
      "input_nodes": [
        {
          "label": "mustard",
          "states": ["liquid"],
```

```json
      "ingredients": [],
      "container": null
    }
  ],
  "motion_node": "add",
  "output_nodes": [
    {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey", "mustard"],
      "container": null
    }
  ]
},
{
  "input_nodes": [
    {
      "label": "liquid",
      "states": ["oil"],
      "ingredients": [],
      "container": null
    }
  ],
  "motion_node": "add",
  "output_nodes": [
    {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey", "mustard", "oil"],
      "container": null
    }
  ]
},
{
  "input_nodes": [
    {
      "label": "bowl",
      "states": [],
      "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey", "mustard", "oil"],
      "container": null
    }
  ],
  "motion_node": "toss",
  "output_nodes": [
    {
```

```
      "label": "bowl",
      "states": ["mixed"],
      "ingredients": ["spinach", "strawberry", "orange", "olive", "nut", "honey", "mustard", "oil"],
      "container": null
    }
  ]
 }
]
```

**Guidelines:**

* Replace placeholders with actual details such as the dish name, required ingredients, and available kitchen items.

* Provide clear and detailed instructions for generating the task tree.

* Ensure completeness and accuracy in the task tree structure.

* Handle missing ingredients appropriately, either by suggesting alternatives or returning an error message.