# Exercise 1: Formation of Research Problem

*(Continuation of Exercise 1)*

## Step VIII: Operationalize your concepts.

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| **Objective/Research Questions/Hypothesis** | **Major Concepts** | **Indicators** | **Variables** | **Unit of Measurement** |
| Design and Build models with AI technologies with NLP | Natural Language Processing (NLP) | Fundamentals concepts of NLP | Familiar with | Understand the concepts of NLP |
| NLP models | Awareness | Different NLP models |
| Know NLP Tool Sets | Familiar with  Extensiveness | Different NLP software tools and programming techniques |
| Domains for NLP integration | Different Domains | Awareness of | Different domains where NLP has been implemented |
| Knowledge about NLP implementations | Integration methods | Effectiveness of integration of NLP |
| NLP functionalities | Use of NLP with Integration | Gain Knowledge  Effectiveness | Different NLP integrations and insights |
| Quality of NLP Integration | Precision  Limitation | General accuracy of NLP integrations and limitations of NLP |
| Design and Implementation of NLP system | Learn Integration Techniques | Knowledge | Different integration techniques |
| Design of NLP based modal | Effectiveness of | NLP model design with comprehensive idea |
| Implementation of NLP model design | Implementation of | Implementation of NLP model designed |

## Step IX: Operationally define your study population.

The study population is important while doing research in terms of testing the result. It is defined as users of a particular domain which interact with the system frequently.

In this study, the study population from which the sample population can be taken are developers in IT field who use the virtual assistants and other software embedded machine tools for easy of work and life.

## Step X: Construct your hypothesis or hypotheses for each subobjective/research question.

Based on the preliminary analysis before the research to be conducted, hypotheses based on the subobjectives stated have been constructed as given below.

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|  | Subobjectives | Hypothesises |
| 1 | To create a deep understanding of Natural Language Processing. | Understanding the role of each NLP model, and techniques available now in enhancing the performance of NLP integrations. |
| 2 | To gain knowledge of different domains available for NLP integration. | Examining the impacts of NLP systems in AI based solutions in each domain of implementation done. |
| 3 | To design NLP based systems. | Users will find the proposed NLP based system as an effective tool for their daily life. |
| 4 | To apply NLP based functionalities with the AI implementations available today. | Implementation of the NLP design proposed into current AI implementations will improve the performance and functionalities. |