**BASIC UNDERSTANDING OF TOPICS**

**A basic understanding of the topics that we got is given below.**

**1. Logical Reasoning**

Logical reasoning is basically how we think things through to figure stuff out. Like when you're deciding what to eat — you might reason, “I had pizza last night, so I’ll go for a burger today.” It’s all about making sense of stuff and using what you know to make decisions. In coding, it’s like setting up rules — “if this happens, then do that.” For example, if a button is clicked, show a message. It's basically how we use our brain to solve problems.

**2. Number Theory**

Number theory is all about numbers and their little quirks. Ever noticed that some numbers can only be divided by 1 and themselves? Those are called prime numbers (like 2, 3, 5, 7). It’s kinda like finding hidden gems in a pile of numbers. In real life, number theory helps out in things like making sure your passwords are safe. Computers use prime numbers to keep your stuff secure online, so that random people can’t just crack your password. It also helps when you're coding stuff that has to do with numbers, like generating random numbers or figuring out math-based problems in programs.

**3. Graph Theory**

Graph theory is all about connections. Picture a group of friends on Facebook — the people are like dots (called "vertices") and the lines connecting them are the "edges" showing who’s friends with who. This happens in real life too. Think of how Google Maps finds the best route between places — that’s graph theory. It’s like mapping out relationships and connections between things. It’s also how social media works, or even how computers talk to each other over networks. All those links and relationships? Yup, that’s graph theory in action!

**4. Asymptotic Notation**

Okay, so this one sounds all fancy, but it’s just a way to talk about how fast or slow something gets as it gets bigger. Imagine you have a program that’s sorting a list of names. If the list gets super long, the program might slow down. Asymptotic notation is a way to measure how much slower it gets when the list gets huge. It’s like when you’re driving and someone asks, "How much longer will the trip take?" You can’t just guess — you need a way to know how long it will take when the road gets crazy busy. In coding, it helps to figure out which algorithm (like a set of steps to solve a problem) is gonna work best when things get big and complicated.

**5. Search Engines and Algorithms**

When you search something on Google, you’re actually asking a robot (an algorithm) to find the best answers for you. But how does it know what to show? Well, it looks at all kinds of things, like which pages are most popular, what words match what you searched, and a bunch of other stuff. It’s kinda like asking a friend for advice, and they recommend stuff based on what they know. In programming, algorithms aren’t just in search engines; they’re everywhere — like in apps that suggest new music, videos, or products you might like. They just help you find what you’re looking for without you having to do all the searching yourself.

**Everyone in the group was there when we were going over these topics.**