# DEPARTMENT OF APEX INSTITUTE OF TECHNOLOGY

## PROJECT PROPOSAL

**1. Project Title: -** Research paper on Serverless Computing Architecture and Applications

## 2. Project Scope: - (Max 500 words)

The scope of our project on "Serverless Computing: Architecture and Applications" is broad and multifaceted. We aim to explore serverless computing, a model where the task of managing servers is handled by cloud service providers, freeing developers from this responsibility.

Our research will focus on understanding the architectural paradigms of serverless computing, particularly Function as a Service (FaaS) and Backend as a Service (BaaS). We will conduct a comparative analysis of these paradigms, considering their respective use cases and benefits.

We will discuss the advantages of serverless computing, such as reduced server management complexity, cost-effectiveness due to its pay-as-you-go model, and auto-scaling. However, we will also address the challenges and drawbacks associated with it. We will include an analysis of the offerings of major cloud providers like AWS Lambda, Google Cloud Functions (GCF), and Azure Functions.

In the implementation section, we will explore how developers write their application code as a set of discrete functions in FaaS, each performing a specific task when triggered by an event. We will explain the event-driven nature of serverless architectures and how applications respond to certain events or triggers.

While the security of the physical servers is shifted onto the cloud provider, the responsibility for securing the code still lies with the developers. We will discuss this aspect of security in serverless computing. We will also provide an overview of real-world use cases for a serverless computing architecture.

The problem statement for our research paper is: "Despite the promise of serverless computing to significantly reduce the cost and complexity of deploying and managing applications, there are still many challenges and uncertainties associated with its architecture and applications. These include security concerns, cold start times, vendor lock-in, and the difficulty of managing state in a stateless environment. Our

research aims to explore these issues in depth, providing a comprehensive understanding of serverless computing's architecture and applications, and proposing potential solutions and best practices for overcoming these challenges."

In simple terms, we're looking at how serverless computing works, what it's good for, what problems it has, and how different companies offer it. We'll also look at how it's used in the real world, and what developers need to think about when they use it. Our goal is to understand serverless computing better and suggest ways to deal with its challenges.

## 3. Requirements: -

- Software Requirements
  1. Cloud Service Providers
  2. Serverless Frameworks
  3. Development tools
  4. Testing tools
  5. Monitoring and Debugging tools

### STUDENTS DETAILS

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### APPROVAL AND AUTHORITY TO PROCEED

We approve the project as described above, and authorize the team to proceed.

| Name | Title | Signature (With Date) |
|---|---|---|
| Dr. Mandeep Singh | Supervior | |
| Shweta Chauhan | Panellist | |
| Abhishek Tiwari | Panellist | |