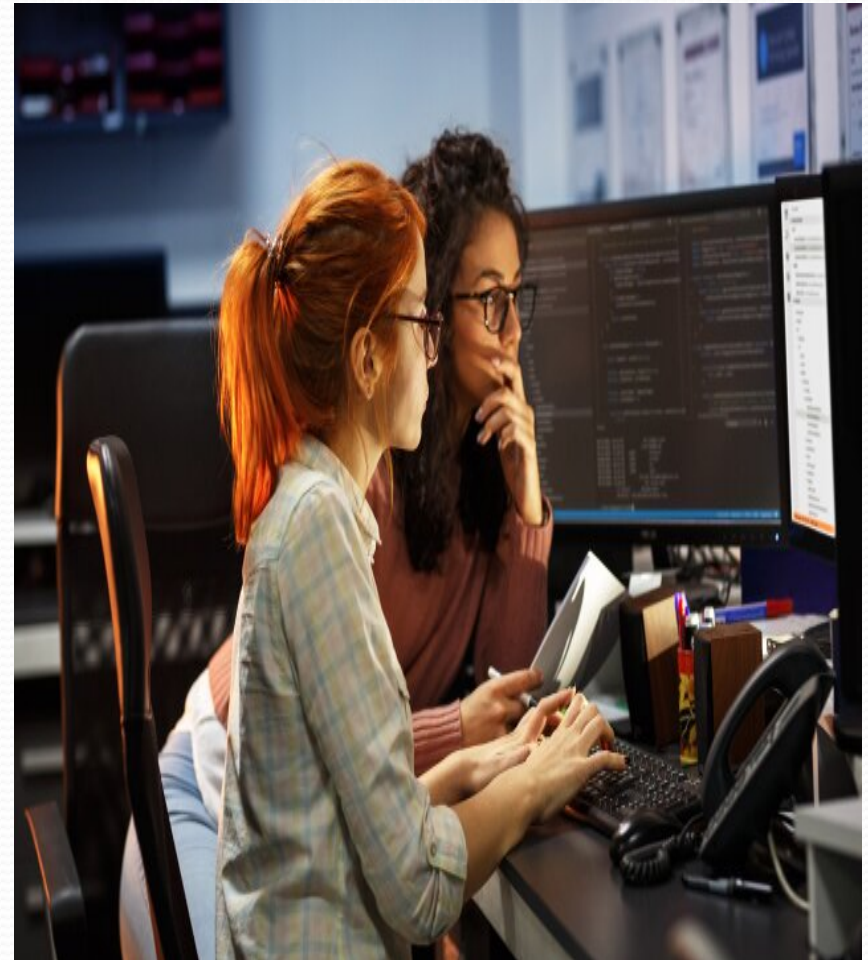- **Subject Name**:- Computer science
- **Topic Name**:- Software Developer
- **Faculty Name**:- Deep Narayan
- **Dept Name**:- IT

SOFTWARE DEVELOPER

INTRODUCTION

What is a software developer

- A software developer is a professional who is responsible for designing and building computer programs.

- Software developer focus only on developing new mobile and desktop applications

What does a software developer do

- A software developer writes code to build online structures, environments and applications.
- Make sure mastery over one or more programming language is necessary for this job role. They perform the following tasks:
- Develop and test software based on client's specifications
- Upgrade existing software.
- Document their work for future references.
- Perform quality assurance on applications they develop or upgrade.

Why become a software developer

- Here are a few reasons for becoming a developer:
- **High demand:** as every industry requires different software products, these professionals are high in demand. With the increased use of technology, the demand for these skilled professionals is likely to rise in the coming years.
- **Various career options:** as a developer, you can choose the programming language in which you want to code. Also, you can choose between working as an independent contractor or freelancer or with a large multinational company. These professionals can work in different industries, from content management to healthcare to gaming.
- **Higher learning prospects:** there are plenty of tools available online using which you can learn different programming languages. While a degree in software development is preferable, it's not always mandatory. You can learn the basics from books, videos and online courses.

What skills do you need to be a software developer

- A successful software developer requires both hard and [soft skills](#) to work efficiently and cr
- **Hard skills**
- Here are some of the more technical skills you may need:
- Programming language and framework
- Mathematics and data analysis
- Data structure and algorithms
- Databases
- Software development lifecycle
- Debugging and software testing
- **Soft skills**
- These are the less technical skills you may need that are still important:
- Problem-solving
- Open-mindedness and adaptability
- Empathy
- Patience
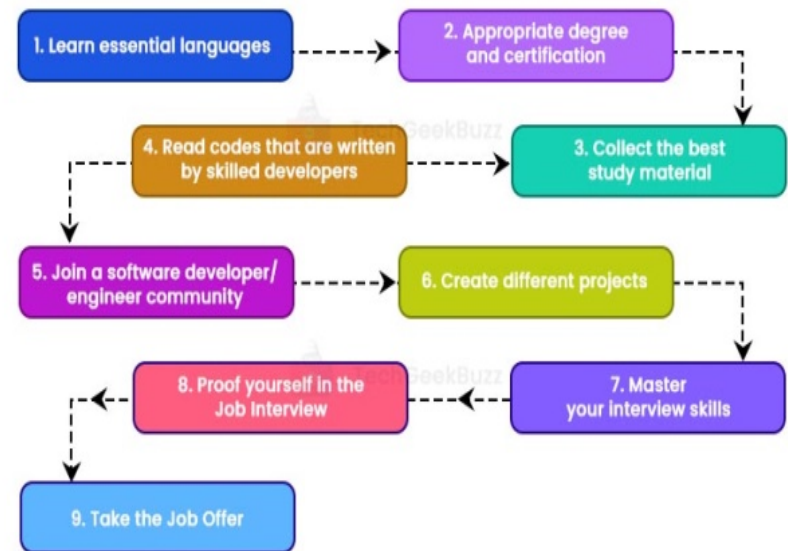- plications.
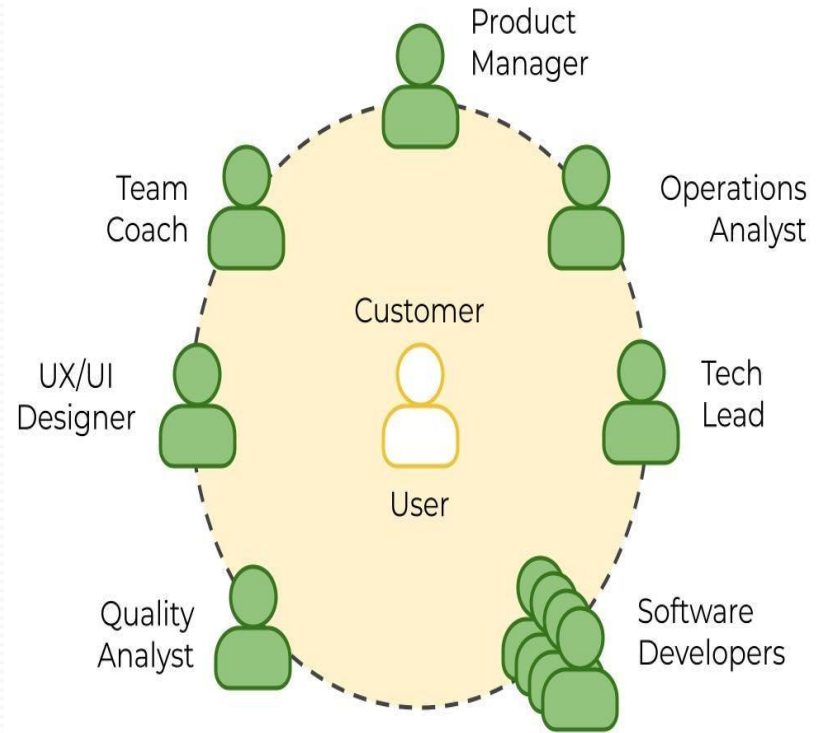
Programming languages needed

- Some of the essential programming languages for software development and aspiring developers are:
- **Java:** a general-purpose programming language that works on a variety of platforms. If you want a career in Android Smartphone application development, learning this language is desirable.
- **Python:** a high-level object-oriented programming language making it a preferred choice for application and web development.
- **C++:** another object-oriented programming language used for high-level and low-level functions.
- **Ruby**: one of the simplest languages because one does not have to learn commands or vocabulary.
- **Scala:** it is a relatively new programming language. When compared with C++ and Java, Scala is easy to learn.
- **JavaScript:** it helps in developing interactive front end application.

How to become a software developer

- Follow this step-by-step guide to become a so
- **1. Clear your higher secondary or 10+2**
- **2. Earn a bachelor's degree**
- **3. Further your education**
- **4. Complete your internship**
- **5. Learn software tools and programming language**
- **6. Create your CV**
- **7. Develop a portfolio**

Become a Software Developer

1. Learn essential languages → 2. Appropriate degree and certification → 3. Collect the best study material

4. Read codes that are written by skilled developers

5. Join a software developer/ engineer community → 6. Create different projects → 7. Master your interview skills

8. Proof yourself in the Job Interview

9. Take the Job Offer

Types of Software Engineers

- The software engineering field is vast, with different roles based on the complexity of the application. Accordingly, engineering functions have different types of software engineers in their teams.
- Front-End Engineer
- Back-End Engineer
- Full Stack Engineer
- Software Engineer in Test (QA Engineer)
- Software Development Engineer in Test (SDET)
- DevOps Engineer
- Security Engineer
- Data Engineer
- Cloud Architect

Front-End Engineer

- A software engineer who specializes in the development of the user interface (UI) is called a front-end engineer. The user interfaces include visual elements like layouts and aesthetics. Front-end engineers deal with cross browser compatibility and fixing bugs to ensure an excellent visual presentation of the UI. Thus, they work with the code that runs on different user devices, browsers, and operating systems. Developing a responsive application also comes under this.
- **Skills of a Front-End Engineer**
- Proficiency in HTML, CSS, and JavaScript
- Experience with front-end frameworks and libraries like React, Angular, Vue.js, and jQuery.
- Understanding of responsive design
- Knowledge of browser compatibility issues
- Familiarity with version control systems
- Ability to work with APIs
- Good communication and collaboration skills
-

Front-end Development

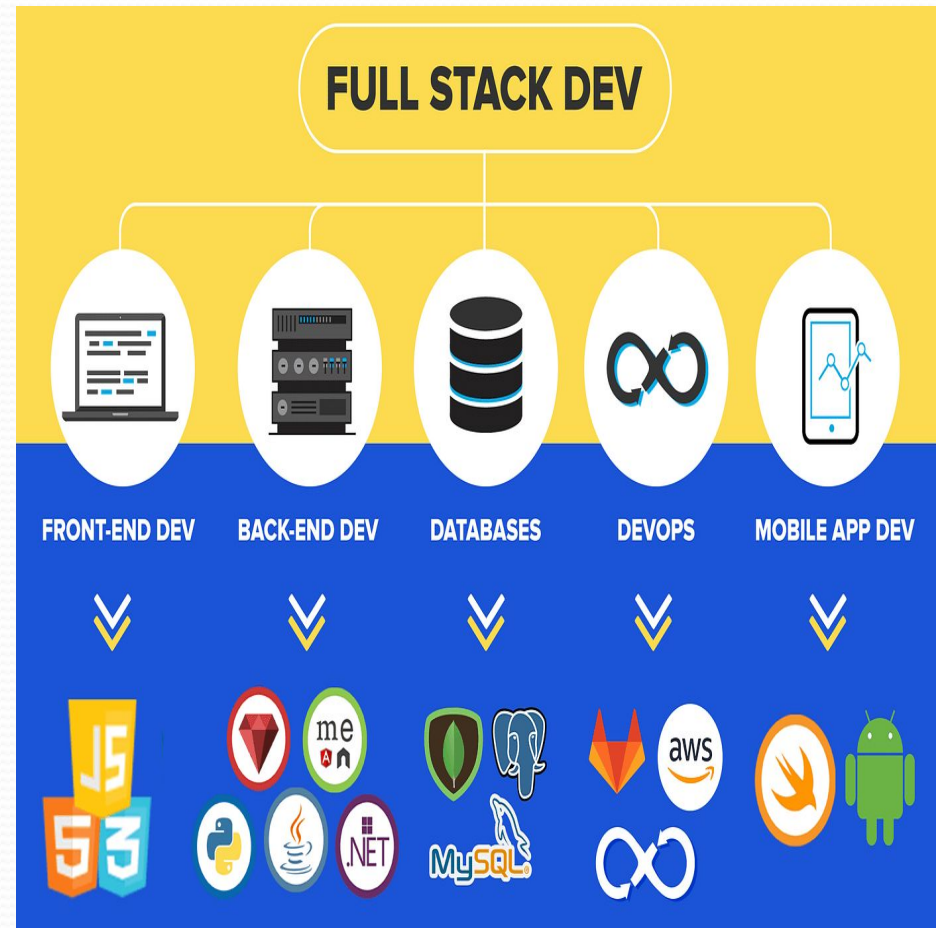HTML5   CSS3   JAVA SCRIPT   AngularJS   ReactJS

Back-End Engineer

- A software engineer who specializes in the underlying logic and performance of the application is called a back-end engineer. They often design and implement the core logic, keeping in mind scalability. They do this by integrating with data systems, caches, email systems using Application Programming Interfaces (APIs).
- **Skills of a Back-End Engineer**
- Proficiency in one or more programming languages like Java, Python, PHP, Ruby, or Node.js
- Understanding of web development frameworks like Spring, Django, Laravel, or Ruby on Rails.
- Experience with databases such as MySQL, PostgreSQL, MongoDB, or Cassandra.
- Knowledge of server and network architecture
- Familiarity with RESTful APIs
- Good debugging and problem-solving skills
- Good communication and collaboration skills

Full Stack Engineer

- A software engineer who can handle both front-end and back-end work is called a full-stack engineer. They have the skills required to create a fully functional web application.
- **<u>Skills of a Full-Stack Engineer</u>**
- Proficiency in one or more programming languages like Java, Python, PHP, Ruby, or Node.js
- Experience with front-end frameworks and libraries like React, Angular, Vue.js, and jQuery.
- Understanding of web development frameworks like Spring, Django, Laravel, or Ruby on Rails.
- Familiarity with databases such as MySQL, PostgreSQL, MongoDB, or Cassandra.
- Knowledge of server and network architecture
- Ability to work with APIs
- Good debugging and problem-solving skills
- Good communication and collaboration skills

Software Engineer in Test (QA Eng)

- A software engineer who is responsible for writing software to validate the quality of the application is called a QA engineer. QA engineers create test plans, manual tests, automated tests using tools and frameworks to make sure that products and processes run as expected. They create test summary report, bug reports, and take care of defect management to ensure that the end user gets a seamless user experience.
- **Skills of a Software Engineer in Test (QA Engineer)**
- Proficiency in one or more programming languages like Java, Python, PHP, Ruby, or Node.js to develop test automation scripts
- Understanding of different types of testing such as Unit Testing, Functional Testing, Cross Browser Testing, UI Testing, etc.
- Knowledge of testing frameworks such as JUnit, TestNG, or PyTest to design and execute test cases
- Experience with one or more automation Testing Tools and Libraries such as Selenium, Appium, Cypress, Playwright, Puppeteer, WebdriverIO, NightwatchJS, Espresso, XCUITest, Cucumber, etc.
- Understanding of software development processes such as Agile and Scrum.
- Familiarity of Databases to create Database Tests
- Knowledge of continuous integration and delivery tools like Jenkins, Bamboo, Travis CI, CircleCI, etc.
- Strong analytical and problem-solving skills
- Good documentation, communication and collaboration skills

Software Development Engineer in Test (SDET)

- While SDET if often confused with the QA Engineer or Software Engineer in Test, and sometimes even used interchangeably, SDET is an overlap of Development and Testing. SDETs are developers who are well-equipped with testing skills and are responsible for testing along with Development.

- **<u>Skills of a Software Development Engineer in Test (SDET)</u>**

- The Skills of SDET are similar to Software Engineer in Test (QA), however, SDET should be more proficient in Automation Frameworks and have a strong hold on the programming languages.
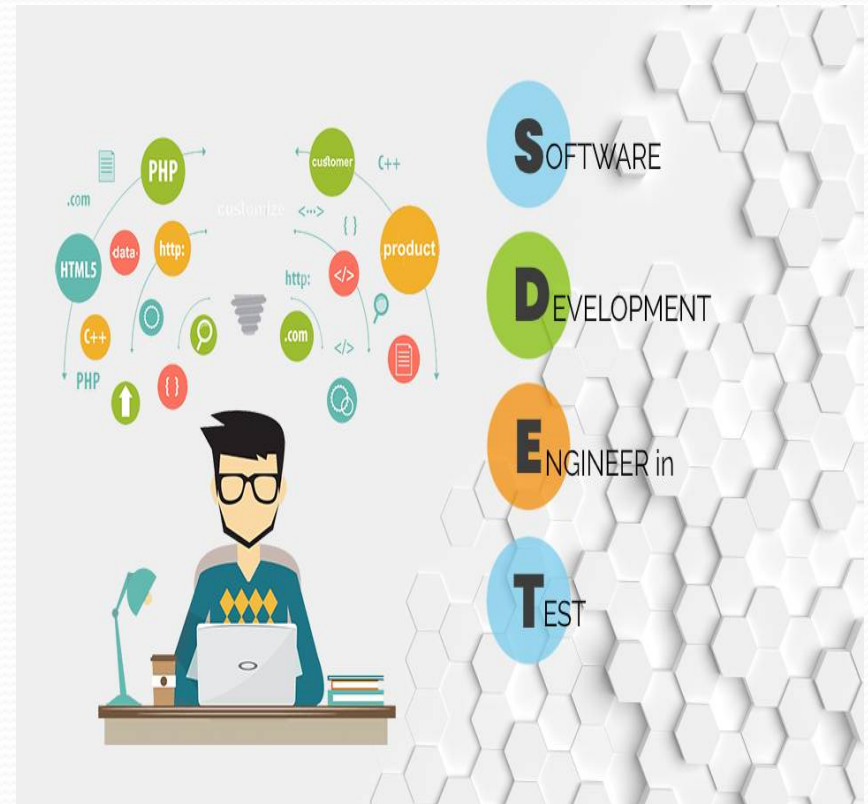
DevOps Engineer

- Software engineers who are familiar with the technologies required for the development of systems to build, deploy, integrate and administer back-end software and distributed systems are called DevOps engineers. They mostly manage the application infrastructure, i.e., the database systems, servers, etc.

- **<u>Skills of a DevOps Engineer</u>**

- Proficiency in scripting languages such as Bash, Python, or Ruby

- Experience with automation tools such as Chef, Puppet, Ansible, or Terraform

- Familiarity with cloud platforms such as Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP).

- Understanding of containerization technologies such as Docker or Kubernetes

- Knowledge of continuous integration and delivery tools like Jenkins, Bamboo, Travis CI, CircleCI, etc.

- Familiarity with monitoring and logging tools such as Nagios, Prometheus, or ELK

- Strong problem-solving skills

Security Engineer

- A software engineer who specializes in creating systems, methods, and procedures to test the security of a software system and exploit and fix security flaws is called a security engineer. This type of developer often works as a "white-hat" ethical hacker and attempts to penetrate systems to discover vulnerabilities.
- **<u>Skills of a Security Engineer</u>**
- Strong understanding of information security
- Familiarity with security tools and technologies such as firewalls, intrusion detection and prevention systems (IDS/IPS), security information and event management (SIEM), and vulnerability scanning tools.
- Proficiency in scripting and programming languages such as Python, Perl, or Ruby
- Experience with security compliance frameworks such as PCI-DSS, HIPAA, or ISO 27001
- Familiarity with cloud security services such as AWS Security, Azure Security, or Google Cloud Security
- Understanding of threat modeling and risk assessment
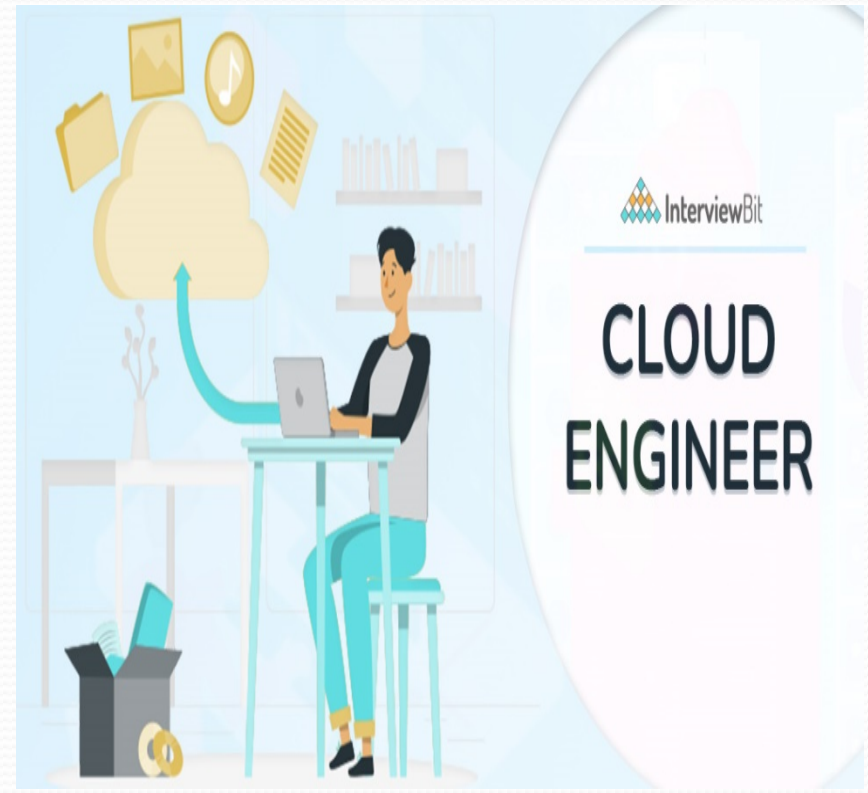- Strong analytical and problem-solving skills

Data Engineer

- Data Engineers handle operations like ETL, Data Warehousing, Database management, and Data Mining, to name a few. They help the developer and test engineers with the data infrastructure that is used to ensure the smooth functioning of the application.
- **<u>Skills of a Data Engineer</u>**
- Proficiency in programming languages such as Python, Java, or Scala to develop and maintain data pipelines, ETL processes, and data models.
- Experience with big data technologies such as Hadoop, Spark, or Kafka
- Familiarity with data warehousing technologies such as Snowflake, Redshift, or BigQuery
- Knowledge of data modeling and database design
- Understanding of data governance and security
- Proficiency in SQL
- Familiarity with cloud platforms such as AWS, Azure, or Google Cloud Platform
- Strong problem-solving skills
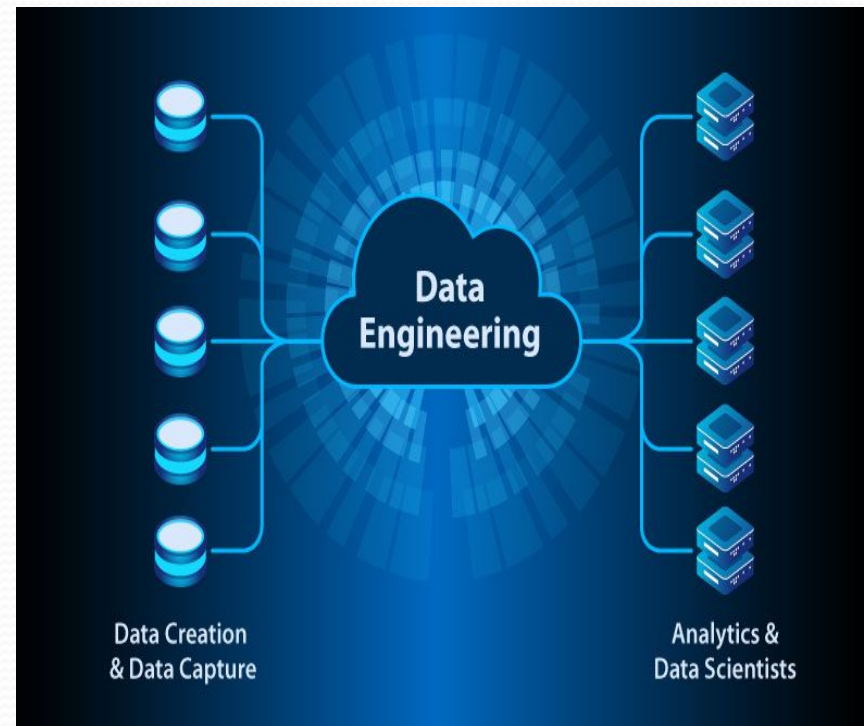
Cloud Engineer

- A cloud engineer is an IT professional who builds and maintains cloud infrastructure. Cloud engineers can have more specific roles that include cloud architecting (designing cloud solutions for organisations), development (coding for the cloud), and administration (working with cloud networks).

- A cloud engineer's day-to-day tasks might include:

- Helping organisations migrate their computer systems to the cloud

- Configuring cloud infrastructure components like networking and security services

- Creating the applications and databases that perform on the cloud

- Monitoring cloud management and data storage services

InterviewBit

CLOUD ENGINEER