**Difference between Forward Engineering and Reverse Engineering**

**Forward Engineering** is a method of creating or making an application with the help of the given requirements. Forward engineering is also known as Renovation and Reclamation. Forward engineering requires high proficiency skills. It takes more time to construct or develop an application. Forward engineering is a technique of creating high-level models or designs to make in complexities and low-level information. Therefore this kind of engineering has completely different principles in numerous package and information processes. Forward Engineering applies of all the software engineering process which contains SDLC to recreate associate existing application. It is near to full fill new needs of the users into re-engineering.

**Characteristics of forward engineering:**

1. Forward engineering is a variety of engineering that has different principles in numerous package and information processes.
2. Forward engineering is vital in IT as a result of it represents the ‘normal’ development process.
3. Forward engineering deals with the conversion of business processes, services, and functions into applications.
4. In this method business model is developed first. Then, a top-to-down approach is followed to urge the package from the model developed.
5. Forward engineering tools are accustomed move from implementation styles and logic to the event of supply code.
6. It essentially permits the user to develop a business model which may then be translated into data system components.
7. These tools basically follow the top-to-down approach. System creator and visual Analyst is a forward engineering CASE tool.



**Reverse Engineering:**

Reverse Engineering is also known as backward engineering, is the process of forward engineering in reverse. In this, the information is collected from the given or existing application. It takes less time than forward engineering to develop an application. In reverse engineering, the application is broken to extract knowledge or its architecture.



Difference between Forward Engineering and Reverse Engineering

| **Forward Engineering** | **Reverse Engineering** |
| --- | --- |
| In forward engineering, the application are developed with the given requirements. | In reverse engineering or backward engineering, the information are collected from the given application. |
| Forward Engineering is a high proficiency skill. | Reverse Engineering or backward engineering is a low proficiency skill. |
| Forward Engineering takes more time to develop an application. | While Reverse Engineering or backward engineering takes less time to develop an application. |
| The nature of forward engineering is Prescriptive. | The nature of reverse engineering or backward engineering is Adaptive. |
| In forward engineering, production is started with given requirements. | In reverse engineering, production is started by taking the  existing products. |
| The example of forward engineering is the construction of electronic kit, construction of DC MOTOR , etc. | An example of backward engineering is research on Instruments etc. |
| Forward engineering Starts with requirements analysis and design, then proceeds to implementation and testing. | Reverse engineering Starts with an existing software system and works backward to understand its structure, design, and requirements. |
| Forward engineering is used to create new software applications from scratch. | Reverse engineering is Used to modify and improve an existing software application. |
| Forward egineering is process of moving from a high-level abstraction to a detailed implementation. | Reverse engineering is a process of moving from a low-level implementation to a higher-level abstraction. |
| Requires a clear set of requirements and design specifications. | Requirements and design specifications may not be available, making it necessary to reconstruct them from the code itself. |
| Forward engineering is generally more time-consuming and expensive. | Reverse engineering is generally less time-consuming and less expensive. |
| The final product is completely new and independent of any existing software system. | The final product is typically a modified or improved version of an existing software system. |
| Involves a series of steps such as requirements gathering, design, implementation, testing, and deployment. | Involves steps such as code analysis, code understanding, design recovery, and documentation. |
| Forward engineering is commonly used in the initial stages of software development. | Reverse engineering is commonly used in the maintenance stage of the software development life cycle. |

**ANOTHER NOTES(Tutorial points notes)**

Both **Forward** and **Reverse Engineering** are related to the re-implementation of the legacy systems to achieve more sustainability. On the basis of the mode of creation, we can classify these modes as Forward and Reverse Engineering. Read this article to learn more about forward engineering and reverse engineering and how these two approaches are different from each other.

## What is Forward Engineering?

**Forward Engineering** is the mode of development of an application in which the development is done on the basis of given requirements from the client or consumer.

In forward engineering, the requirements are provided before the development of the application. In simple words, forward engineering is the mode of creation in which the application is developed with provided information from the customer.

Since forward engineering involves the actual development of the software application, it requires high skills and more time. Forward engineering is prescriptive in nature.

## What is Reverse Engineering?

**Reverse Engineering** is the mode of development in which the development is executed on the basis of requirements gathered from the developed application or the changes or enhancements that are provided from the client or consumer. In other words, in revere engineering, the information is obtained from a given application. It is also known as **backward engineering**.

Since it does not require principles of software engineering, it needs less proficiency, skills, and less time. Examples of reverse engineering includes research and development work which could get implemented in an existing application.

## Difference between Forward Engineering and Reverse Engineering

The following are the main differences between both of the Engineering −

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| --- | --- | --- |
| **Key** | **Forward Engineering** | **Reverse Engineering** |
| Definition | Forward Engineering is the mode of creation or development in which the development is done on the basis of given requirements from client/consumer. In this the requirements are provide prior to the development of the application. | On other hand Reverse Engineering is the mode of creation or development in which the development is done on the basis of requirements gathered from the developed application or the changes/enhancements that are provided from the client/consumer. |
| Execution Time | The application is to be developed from scratch and all approaches and planning need to be done before actual development get stared so it requires more time as compared to that in Reverse Engineering. | Reverse Engineering takes less time to develop an application as only modification and enhancements need to developed instead of core functionality of the application. |
| Proficiency Skill | The application need to be developed from scratch so high skill proficiency is need to decide approaches and development planning in case of Forward Engineering. | In Reverse Engineering, low or medium skill proficiency is also sufficient. |
| Nature | The nature of Forward Engineering is Perspective. | Reverse Engineering is Adaptive in nature. |
| Example | Example of Forward Engineering could be any newly developing application or system that is started or about to start based on given requirements. | Reverse engineering includes mainly research and RND work which could get implemented in the already developed application or system for providing more efficient performance with more functionality. |

## Conclusion

The most significant difference that you should note here is that, in forward engineering, an application is created as per the provided information; whereas in reverse engineering, the information is obtained from an existing application.