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## PYTHON APPLICATION PROGRAMMING (19SCS631)

**A MINI PROJECT REPORT**

**ON**

**“TEMPERATURE/MEASUREMENT CONVERTER”**

***Submitted in the partial fulfilment of the requirements for the award of the degree of***

## BACHELOR OF TECHNOLOGY IN

**COMPUTER SCIENCE AND ENGINEERING**

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**Abstract**

Temperature and measurement conversions are important in a wide range of fields, including science, engineering, and medicine. These conversions allow us to express the same quantity in different units, which can be useful for comparisons, calculations, and communication. In this abstract, we will discuss the concept of temperature and measurement conversions and how they are used in various applications.

Temperature conversions involve converting a temperature from one unit of measurement to another. The most commonly used units of temperature are Celsius (°C), Fahrenheit (°F), and Kelvin (K). Celsius is the most widely used temperature scale, where 0°C is the freezing point of water and 100°C is the boiling point of water at standard atmospheric pressure. Fahrenheit, on the other hand, is mostly used in the United States, and 32°F is the freezing point of water, while 212°F is its boiling point. Kelvin is an absolute temperature scale where 0 K is absolute zero, the theoretical temperature at which all molecular motion ceases. To convert between these units, there are various formulas and conversion factors that can be used.

Measurement conversions, on the other hand, involve converting one unit of measurement to another. Some common examples of measurements include length, mass, volume, and time. Conversions between these units can be useful for comparing measurements in different units or performing calculations that require a specific unit of measurement. For example, in the United States, people typically use pounds to measure weight, while in many other parts of the world, the metric system is used, and kilograms (kg) are used to measure weight.

There are various tools and resources available for temperature and measurement conversions. Online conversion calculators are readily available, allowing users to input a value in one unit and receive the equivalent value in another unit. Many scientific calculators also have built-in conversion functions, allowing users to perform conversions quickly and easily. Additionally, some smartphone apps offer temperature and measurement conversion capabilities, making it easy to perform conversions on-the-go.

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**Chapter 1:**

# Introduction

Conversion of temperature is the process of changing the value of temperature from one unit to another. There are many methods of conversion of temperature, among them Kelvin, Celsius and Fahrenheit are the most frequently used methods. According to the Fahrenheit scale, the freezing point of water is 32°F and the boiling point is 212°F but, according to the Celsius temperature scale, the freezing point of water is 0°C and the boiling point is 100°C.

## Celsius Scale:

The Celsius scale is also called the centigrade scale, and it is based on 0° C for the freezing point and 100° C for the boiling point of water. Initially, On the Celsius scale, 0° is used to denote the boiling point of water and 100° C to denote the freezing point of water. Further, these values were inverted 0° for the freezing point and 100° for the boiling point of water. This form of scale gained widespread use all over the world.

## Fahrenheit Scale:

This scale is based on 32° for the freezing point of the water and 212° for the boiling point of the water, the interval between the freezing point and the boiling point in being divided into 180 equal parts. The Fahrenheit temperature scale was first introduced in the 18th century by a German physicist named Daniel Gabriel Fahrenheit. Initially, he selected zero of his scale, as the temperature of the ice salt mixture. And then selected the values of 30° and 90° for the freezing point of water and normal body temperature, Later they were revised to 32° and 96°. But, the final scale requires an adjustment to 98.6° for the latter value. The Fahrenheit scale is used in the US and the Celsius or centigrade scale is used in most of the other countries, for scientific purposes worldwide. The conversion formula for a temperature that is expressed on the Celsius (°C) scale to its Fahrenheit (°F) formula is given below:°F = (9/5 × °C)

+ 32.

## Definition of an inch:

An inch is defined as the measurement unit used in Imperial and the US Customary measurement systems. It is the unit of length. It is represented using the notations “in” or the symbol “.

Common usage

* Inch is very often used as a measure for electronic parts especially display screens for laptops, televisions, or mobile phones.
* Inches are also commonly used to specify the diameter of vehicle wheel rims and the corresponding inner diameter of tyres in tyre codes.

## Definition of a centimetre:

A centimetre is a unit of length in the metric (SI) system, equal to one- hundredth of a metre. It is represented using the notation “cm”.

Common usage

* It is mostly used in all sorts of applications to measure the length of everyday objects
* It is a widely used metric to report the level of rainfall.
* In maps, centimetres are used to make conversions from map scale to real-world scale (kilometres).

Inch to cm formula

1 (inch) in = 2.54 (centimetre) cm

Inches can be converted to the centimetres values by multiplying the given inch value by 2.54 cm.

**Chapter 2:**

# Purpose of the project

The purpose of a temperature/measurement converter is to provide a tool for users to convert between different units of measurement or temperature scales. For example, a user might want to convert a temperature from Celsius to Fahrenheit, or they might want to convert a length measurement from inches to centimetres.

A temperature/measurement converter can be useful in a variety of contexts, such as in scientific research, engineering, construction, cooking, and everyday life. It can save time and effort by providing an easy way to convert measurements without the need for manual calculations.

Additionally, a temperature/measurement converter can help to avoid errors that can occur when converting between different units, especially for users who are not familiar with the conversion formulas or who are not comfortable with math.

Overall, the purpose of a temperature/measurement converter is to provide a convenient and accurate tool for users to quickly and easily convert between different units of measurement or temperature scales.

**Chapter 3:**

# Advantages to the society

1. **Convenience:** A temperature/measurement converter makes it easy to convert between different units of temperature or measurement, providing a convenient tool for everyday use.
2. **Accuracy:** Using a converter ensures that temperature or measurement conversions are accurate, eliminating human error and increasing precision.
3. **Speed:** A converter can quickly and efficiently convert between different units, saving time and increasing productivity.
4. **Flexibility:** With a temperature/measurement converter, you can easily switch between different units of temperature or measurement, giving you the flexibility to work with different systems.
5. **Accessibility:** Temperature/measurement converters are widely available and accessible, making it easy to find one that suits your needs.
6. **Versatility:** A temperature/measurement converter can convert between a wide range of units, making it useful for a variety of applications.
7. **Consistency:** A converter ensures that temperature or measurement conversions are consistent across different systems, providing standardization.
8. **Customization:** Some temperature/measurement converters allow you to customize the units and conversions, giving you greater control over the process.
9. **User-friendly:** Many temperature/measurement converters are user-friendly, with simple interfaces that make them easy to use for people of all skill levels.
10. **Portability:** Temperature/measurement converters are often available as mobile apps or online tools, making them easily portable and accessible.
11. **Efficiency:** A temperature/measurement converter can improve efficiency by reducing the time and effort required for manual conversions.
12. **Accuracy verification:** A converter can also be used to verify the accuracy of temperature or measurement readings, providing a useful tool for quality control.
13. **Cost-effective:** Using a converter is often more cost-effective than investing in specialized equipment for specific units of measurement or temperature.
14. **Education:** A temperature/measurement converter can be a valuable educational tool, helping students learn about different units of measurement and temperature.
15. **Standardization:** By providing a standardized way of converting between different units, temperature/measurement converters can help to create consistency across industries and regions.
16. **Internationalization:** A converter can also help to facilitate international communication by providing a common language for temperature and measurement.
17. **Compatibility:** Many temperature/measurement converters are compatible with different systems and devices, making them easy to integrate into existing workflows.
18. **Efficiency:** A temperature/measurement converter can improve efficiency by reducing the time and effort required for manual conversions.
19. **Accessibility:** Temperature/measurement converters are often available in multiple languages, making them accessible to people around the world.
20. **Reliability:** By providing accurate and consistent conversions, a temperature/measurement converter can increase reliability and reduce the risk of errors.

**Chapter 4:**

# Applications

A temperature/measurement converter can be a useful tool for a variety of people, including scientists, engineers, cooks, and travellers. It allows them to easily convert between different units of temperature and length, without having to manually perform calculations.

For example, a scientist may need to convert temperature readings from Celsius to Fahrenheit, or a cook may need to convert a recipe from metric to imperial units. Having a converter at their disposal can save them time and effort, and reduce the risk of errors in their calculations.

Additionally, a measurement converter can be particularly useful for travellers, who may need to convert between different units of length when navigating unfamiliar places. For instance, they may need to convert distances from kilometers to miles or meters to feet. By using a converter, they can quickly and easily get the information they need, without having to rely on their intuition or guesswork.

Overall, a temperature/measurement converter is a simple yet valuable tool that can help people in various fields perform their tasks more efficiently and accurately. By having access to this tool, they can focus on their work or enjoyment, without having to worry about the technicalities of unit conversion.

**Chapter 5:**

# Things learnt from this project

Creating a temperature/measurement converter in Python would require us to understand some of the basic concepts of programming such as data types, variables, and functions. You would also need to be familiar with mathematical operations and conditional statements.

As we build the converter, we learnt how to handle user input, validate and sanitize user input to prevent errors, and output the results in a user-friendly format. We also learnt how to structure your code in a way that is easy to understand, maintain, and modify.

One important concept we encountered while building the converter is the idea of modular programming. By breaking the code down into smaller, more manageable functions, we can make the code more readable, easier to test, and more reusable.

Another important concept we learnt is how to handle errors and edge cases. For example, when converting between different units of measurement, we might encounter situations where the input is out of range or the conversion is not possible. In these cases, we need to handle the error gracefully and provide feedback to the user.

In summary, building a temperature/measurement converter in Python would require us to understand programming basics, as well as more advanced concepts such as modular programming and error handling. Through building the converter, we learnt how to handle user input, perform calculations, and output the results in a user-friendly format.

# Conclusion

In conclusion, the temperature and measurement converter is a valuable tool that can be used in various situations. The Python program we developed utilizes functions to perform conversions between Celsius and Fahrenheit temperatures, as well as meters and feet distances. This program can be extended to include additional units of measurement and is an excellent way to practice programming skills while creating a useful tool.

A temperature and measurement converter is a useful tool for converting between different units of temperature and distance. This kind of converter can be helpful in a variety of situations, such as when traveling to a country that uses a different temperature or measurement system or when working with scientific data that uses different units.

In this report, we developed a simple temperature and measurement converter application using Python programming language. In this project, the user is prompted to choose which conversion they want to perform and then input the value they want to convert. The program then prints the converted value.

Overall, creating a temperature and measurement converter is a great way to practice your programming skills and create a useful tool that can be used in a variety of contexts. With a little creativity, you can extend this program to include other units of measurement and make it even more powerful.

**Code:**

URL:

https://github.com/NithinMP07/Temperature-Measurement-converter.git

**Output:**

