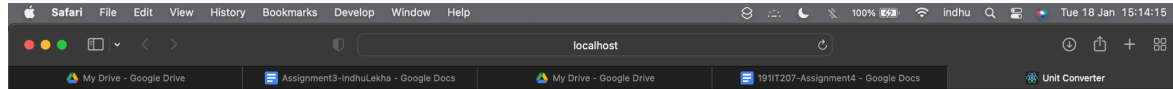


Assignment 4

Annam Indhu Lekha
191IT207

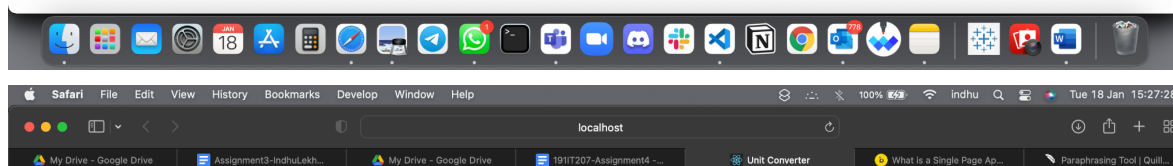
Designed a very minimal user friendly application, that can convert between various units.



All in one Converter

Responsive Unit Converter Built With React, Material-UI and Convert-Units. This features a total of 23 Measurement Types, 185 Measurement Units and also has Two-Way Conversion Support.

Measurement ▼



All in one Converter

Responsive Unit Converter Built With React, Material-UI and Convert-Units. This features a total of 23 Measurement Types, 185 Measurement Units and also has Two-Way Conversion Support.

Measurement ▼

Quantity Megabits ▼

244 Mb

Quantity Bytes ▼

31981568 B



Supported units:

- **Length:** millimetre, centimetre, metre, inches, yards, feet-us, feet, miles
- **Area:** Square millimetres, centimetres, square metres, hectares, square kilometres, square inches, square yards, square feet, acres, square miles
- **Mass:** Micrograms, milligrams, grams, kilograms, metric tonnes, ounces, pounds, tons
- **Volume:** Cubic millimeters, cubic centimeters, milliliters, centiliters, deciliters, liters, kiloliters, cubic meters, cubic kiloliters, matskedar, teskedar, kaffekoppar, glas, kannor, teaspoons
- **Each:** each, dozen
- **Temperature:** Celcius, Kelvin, Fahrenheit, renkine
- **Time:** Nanoseconds, microseconds, milliseconds, seconds, minutes, hours, days, weeks, months, years
- **Digital Storage:** Bits, kilobits, megabits, gigabits, terabits, bytes, kilobytes, megabytes, gigabytes, terabytes
- **Parts per:** Parts per million, parts per billion, parts per trillion, parts per quadrillion
- **Speed:** Metres per second, kilometres per hour, miles per hour, knots, feet per second
- **Pace:** Minutes per kilometre, seconds per kilometre, minutes per mile, seconds per foot
- **Pressure:** Pascals, kilopascal, megapascal, hectopascal, bar, torr, pounds per square inch, kilo pound per square inch
- **Current:** Amperes, milliamperes, kiloamperes
- **Voltage:** Volts, millivolts, kilovolts
- **Power:** Watts, milliwatts, kilowatts, megawatts, gigawatts
- **Reactive Power:** Volt-amperes reactive, millivolt-amperes reactive, kilovolt-amperes reactive, megavolt-amperes reactive, giga-amperes reactive

Principles of User Interface

The user interface (UI) of a software product is critical. When it's done well, users aren't aware of it. When something is done incorrectly, users are unable to overcome it in order to use a product efficiently. Most designers use interface design principles to increase their chances of success while creating user interfaces. Interface design principles are high-level concepts that influence software design.

For the implementation of this application, I adhered to UI standards; a few key concepts are listed below:

Concept of SPA:

Since the functionality is very limited, **server load can be greatly reduced by using single page application(SPA).**

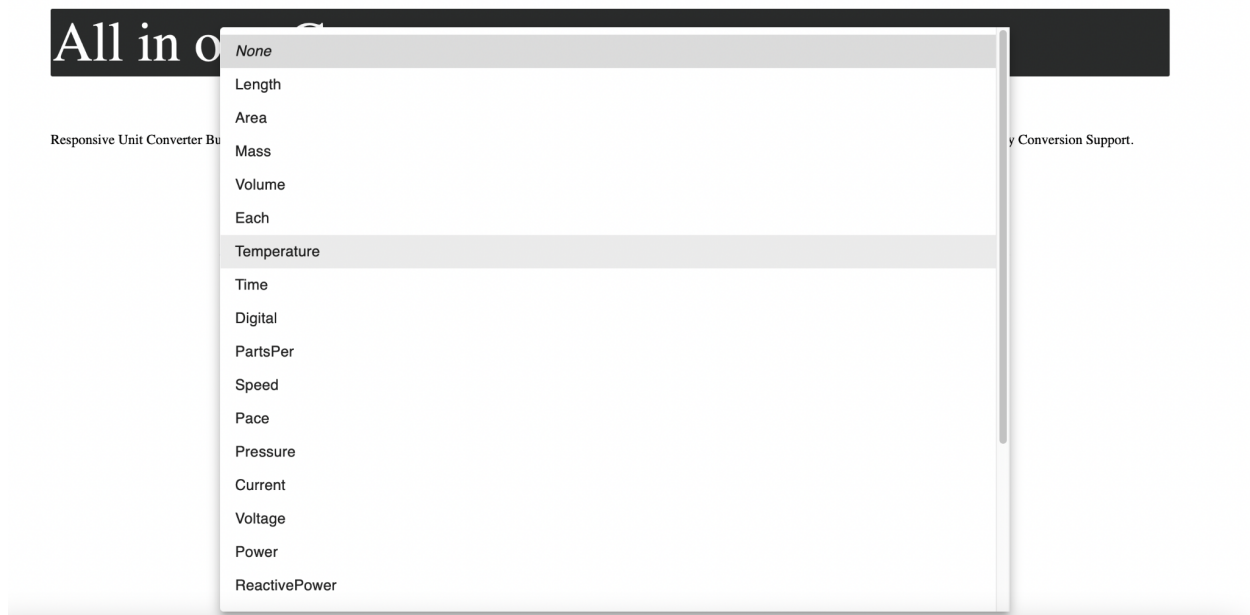
With each click, the SPA just communicates with the server what is needed, and the browser renders that information.

This piece-by-piece, client-side solution significantly **reduces load time for consumers** while also **reducing the quantity of information a server needs to provide** and making it far **more cost efficient**.

Reduce Cognitive load:

Cognitive load is the amount of mental processing power required to use a product. Dropdown menus provide help in achieving this.

Also Users have to fill only **1 field at a time**. Initially the user has to choose a measurement. Then 2 more fields appear.



Only after selecting a measurement, we get 2 more fields to be filled using dropdown menus.

A screenshot of the unit converter interface. At the top, there is a dropdown menu labeled "Measurement" with the value "Mass" selected. Below this, there are two more dropdown menus, both labeled "Quantity". The first "Quantity" dropdown is currently empty, and the second "Quantity" dropdown is also empty.

The user cannot enter data unless both the conversion units are specified.

Informative:

The **abbreviations of the units are displayed in the text boxes**

A screenshot of the unit converter interface showing two text boxes. The first text box contains the value "244" and the unit abbreviation "Mb". The second text box contains the value "31981568" and the unit abbreviation "B".

Maximum functionality possible achieved:

Here there is no **TO** and **FROM** field. The user is **free to choose any 2 units** and can enter data in any one of the units. The answer is automatically displayed in other units.

The interface shows a 'Measurement' dropdown menu set to 'Mass'. Below it are two input fields. The first field is labeled 'Quantity' and 'Ounces', with a value of '5' entered. The second field is labeled 'Quantity' and 'Pounds', with a value of '0.3125' entered. Both fields have a unit indicator ('oz' and 'lb' respectively) on the right side.

Clearly labelled inputs:

Once an entry is entered, the form title moves to the top left

The interface shows two input fields. The first field is labeled 'Quantity' and has a unit indicator 'Inches' on the right. The second field is labeled 'Quantity' and 'Cubic meters', with a unit indicator 'Cubic meters' on the right.

Handles error and non distracting:

Non text entry is **automatically detected** and a **NaN** is displayed instead of showing pop up errors and bothering the users.

The interface shows two input fields. The first field is labeled 'Quantity' and 'Inches', with a value of '80|om|' entered. The second field is labeled 'Quantity' and 'Meters', with a value of 'NaN' entered. Both fields have a unit indicator ('in' and 'm' respectively) on the right side.

All function carried out by minimal interaction from user:

No explicit convert button, as the the conversion takes place and displayed automatically as we type

Also no arrows are required for switching between 2 units as users can type in any for the 2 text fields.