

Project 53



DP
EDUCATION

Coding School

Electricity bill calculator

Enter the unit count

calculate

How It Works

Start here

See the App

Built on Code Studio ▾

- ❖ Let's create an app to calculate the amount to be paid for the amount of electricity used.
- ❖ To design the screen as above, add a label to the screen at the top. Give the text as "Electricity bill calculator".
- ❖ Set the font color to white and the font size to 20
- ❖ Then add an image to insert the image of the electricity meter. Select the electricity meter gif in the library for its image property.
- ❖ Adjust the length, width and location of the image by changing the properties as follows.



- ❖ Use the text input tool to enter the amount of electrical units used. The placeholder, which is one of its properties, is a property that is used to inform the user about what to input in this text input.

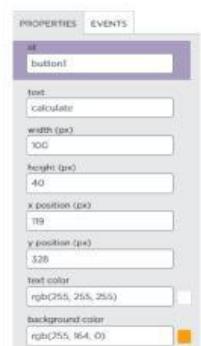
Here, the placeholder is set as "Enter the unit count" because the number of electrical units used should be entered for the text input.

Enter the unit count

Then when the app is run, it will be displayed in the input box like this.

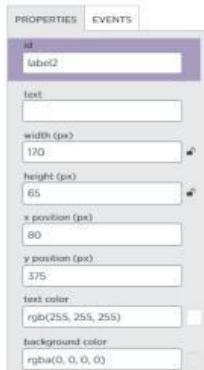


- ❖ After entering the number of units, let's create the calculate button to calculate the price. For that, add a button in the design tool. Change its properties as follows.



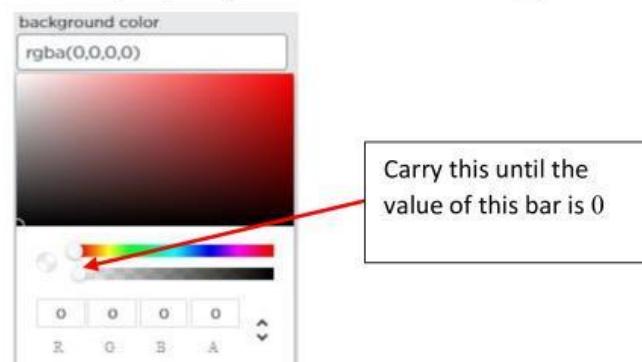
- ❖ Let's add a label to show the price calculated according to the unit quantity entered as the end of the Designing section.

Its properties are as follows.



Here the font size has been increased to 28. The background color has also been made transparent and you can adjust it as follows.

Click on the small color picker box in front of the background color property and do the following.



- To create this app you need to know how to calculate electricity bill. Let's see how it is calculated.
- The electricity bill is calculated using a fixed rate for each range and the price per unit depending on the number of units used.
- The table below shows the fixed charge and price per unit for each unit range.

Unit range	Fixed Rate	Unit Price
1-30	120	8
31-60	240	10
61-90	360	16
91-180	960	50
180 ଟଙ୍କା	1500	75

Now let's see how the price is calculated for the units used as examples of each range.

❖ For 25 Units

$$120 + (25 \times 8) = 320$$

❖ For 42 Units

$$240 + (8 \times 30) + (12 \times 10) = 600$$

(8 per unit for the first 30 units with a fixed charge of Rs 240 and Rs 10 per unit for the remaining 12.)

- ❖ For 62 Units

$$360 + (62 \times 16) = 1352$$

(When the number of units is more than sixty, 16 will be charged from the first unit)

- ❖ For 150 Units

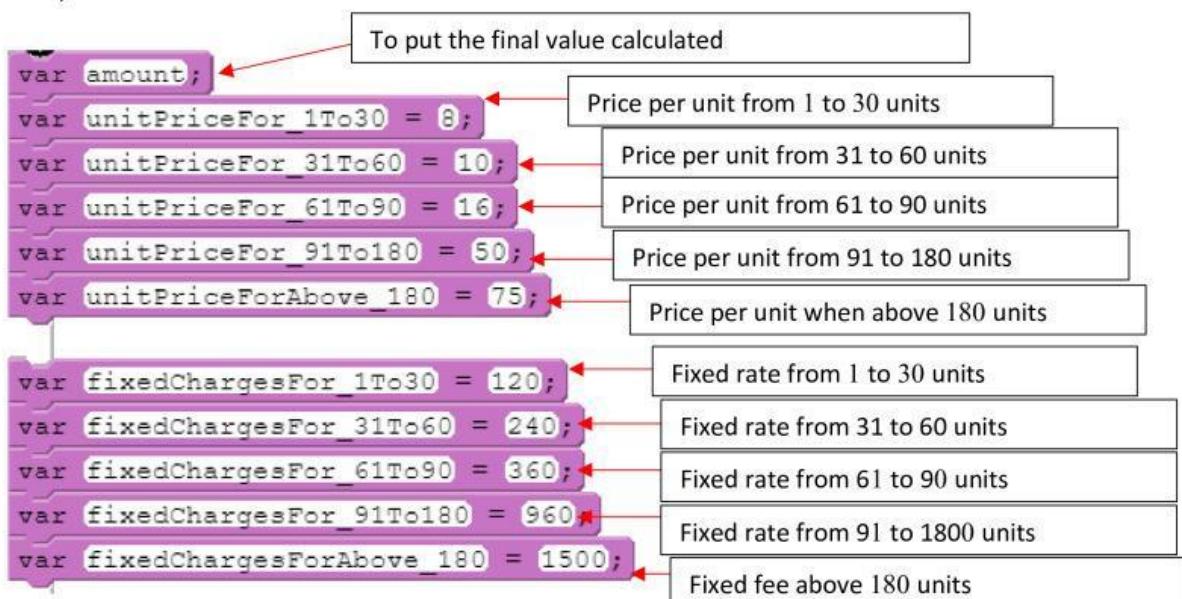
$$960 + (90 \times 16) + (60 \times 50) = 5400$$

- ❖ For 200 Unit

$$1500 + (90 \times 16) + (90 \times 50) + (20 \times 75) = 8940$$

Now it will be clear to you how the electricity bill is calculated in each unit range.

- ❖ After designing, let's start coding. All the variables you need for the calculation are given along with their values. Let's study them first and get an idea. (These values are the values used to calculate the electricity bill in 2022.)



- ❖ Let's use these variables in the code instead of the values of the examples highlighted above.

- ❖ This calculation should happen when the calculate button is clicked, so let's use the onEvent click code block.

- ❖ Create a variable as unit in it.

```
var unit = getProperty("text_input1", "value");
```

Let's initialize a value for the

number of units entered by the input textbox, so
put it as a variable. Let's use this code.

```
onEvent("button1", "click", function() {
```

```
    var unit = getProperty("text_input1", "value");
```

```
});
```

- ❖ Then let's check the range of the number of units entered and perform the relevant calculation and get it into the amount variable created above.

```
if(unit >= 1 && unit <= 30)
{
    amount = fixedChargesFor_1To30 + (unitPriceFor_1To30 * unit);
}
```

If the value of the Unit variable is greater than or equal to 1 and less than or equal to 30, then the "fixedChargesFor_1To30" variable can multiply "unitPriceFor_1To30" x "unit" and add the value obtained and get the price for the units used. Let's equate it to the amount variable. What happens here is the same as in the calculations highlighted above.

- ❖ In the same way for units between 30 and 60 is as follows.

```
else if(unit >= 31 && unit <= 60)
{
    amount = fixedChargesFor_31To60 + (unitPriceFor_1To30 * 30) + (unitPriceFor_31To60 * (unit - 30));
}
```

Here "unitPriceFor_1To30" x 30 for first 30 units and "unitPriceFor_31To60" only for remaining units. Therefore, the number of remaining units should be obtained in this way.

- ❖ Between 60 and 90 units is the same. But here, the amount is calculated by multiplying the first unit by "unitPriceFor_61To90".

```
else if(unit >= 61 && unit <= 90)
{
    amount = fixedChargesFor_61To90 + (unitPriceFor_61To90 * unit);
}
```

- When calculating from 90 to 180 the first 90 units should be multiplied by "unitPriceFor_61To90" and the remaining units should be multiplied by "unitPriceFor_91To180" only. In this case also the remaining number of units should be $(\text{unitPriceFor_91To180} * (\text{unit} - 90))$ obtained in this way as above.

```
else if (unit >= 91 && unit <= 180)
{
    amount = fixedChargesFor_91To180 + (unitPriceFor_61To90 * 90) + (unitPriceFor_91To180 * (unit - 90));
}
```

- For units above 180, the calculation should be done as follows.

```
else
{
    amount = fixedChargesForAbove_180 + (unitPriceFor_61To90 * 90) + (unitPriceFor_91To180 * 90) + (unit - 180) * unitPriceForAbove_180;
}
```

Multiply the first 90 units by "unitPriceFor_61To90" and the 90 units up to 180 by "unitPriceFor_91To180" and multiply only the remaining units by "unitPriceForAbove_180".

- Finally, let's display the value calculated and equated to the amount variable in the label we created to display.

```
setProperty("label2", "text", "Rs." + amount);
```

This should also be coded in the onEvent function itself.

Choose the correct answer.

- Suppose you are given a new electricity price revision that gives you the changes in unit prices and fixed charges. Then which part you need to change in the app?

The logic inside the if else block should change.

The values of the equalizing variables created above should be changed.

The logic that selects the range in the If else blocks should be changed.

- What is the correct calculation to get the amount if the value per unit is 75 from the original unit for more than 180 units?

```

amount = fixedChargesForAbove_180 + (unitPriceFor_61To90 * 90) + (unitPriceFor_91To180 * 60) + ((unit-180) * unitPriceForAbove_180);

amount = fixedChargesForAbove_180 + (unitPriceForAbove180 * unit);

amount = unitPriceForAbove180 + ((unitPriceForAbove180 * unit) - 90);

```

3. If the code should be changed to show the value in cents while showing the price for the units used, then the correct code is,

```

setProperty("label2", "text", "Rs." + (amount + ".00"));

setProperty("label2", "text", "Rs." + amount."00");

setProperty("label2", "text", ("Rs" + "00") + amount);

```

4. Price for used units Rs. If it is more than 5000 then choose the answer with correct step to create “warning” like this.

```

if (amount < 5000) {
    setText("label3", "Warning");
}

```

By adding a new code in this way



By creating a new label and changing its properties and placing it in the relevant place.

Create a new label and change its properties and place it in the relevant place and add this code

```

if (amount > 5000) {
    setText("label3", "Warning");
}

```

5. `var unit = getProperty("text_input1", "value");` Which answer correctly explains the work done by this?

Equating a value to a unit variable

Changing the value of the unit variable as "text_input1".

Equating the value the user provides for "text_input1" to the unit variable