



CREATING AN INTERACTIVE STEPS CONVERTER



lynxcoding.club



Can**CODE***to***LEARN**.ca

With funding from

Canada

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DESCRIPTION

Creating an Interactive Steps Converter

You will create an Interactive Steps Converter.

You will code this app using Lynx at lynxcoding.club

You will alter existing code from a Steps Converter Starter Project that you will find in your Terry Fox coding club.

In this application, you will enter the number of steps you ran during the Terry Fox run, or at some other time, as well as the number of kilometers. The application will determine your rate (i.e., the number of steps per km) and will also show you how many steps you would have taken if you ran as far as Terry Fox did each day!



Layout

Share

Save

Add Objects

Files

Procedures

Clipart

Project Tree

Settings

My Projects

Commands

Help

My project - page1

Procedures

```
1 ; This is an example of a procedure. Type the  
   word DrawSquare in the Command Centre (the  
   area below the white Work Area)  
2  
3 to DrawSquare  
4 pendown  
5 repeat 4 [  
6   forward 100  
7   right 90  
8 ]  
9 end  
10
```

Procedure
Pane

Clipart
Pane

Name your
Project

Turtle

Work Area
(Page)

Command
Centre

HELP!

START IN THE RIGHT PLACE!

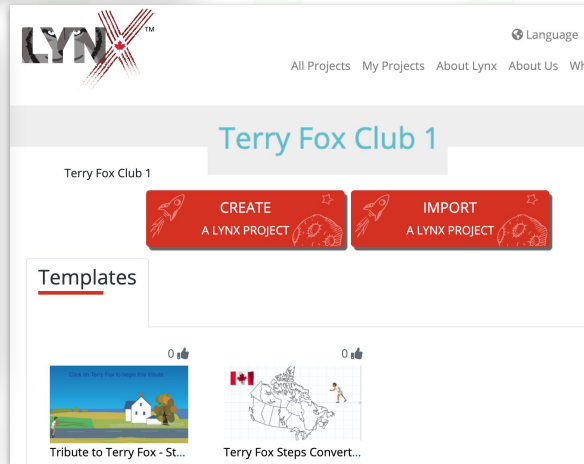
Making sure you create your Project **INSIDE** your Club

TWO WAYS

1. Choose the **Bookmark** for the Club.

2. You should see **Terry Fox Club** in the middle of the screen and 2 projects beneath: **Terry Fox Steps Converter Starter Project** and **Tribute to Terry Fox Starter Project**.

3. You are in the right place!



1. Go to **lynxcoding.club**. Log-in.

2. Below your name, use the arrow to find **Terry Fox Club** and select it.

3. If you see **Terry Fox Club** in the middle of the screen and 2 projects beneath, **Terry Fox Steps Converter Starter Project** and **Tribute to Terry Fox Starter Project**, you are in the right place!

START IN THE RIGHT PLACE!

Make the project yours

4. Open the **Terry Fox Steps Converter Starter Project**. It will appear in **Player** mode. To modify it, click on **Edit**.

Edit

5. **Name** the project something personal, e.g. **Terry Fox Converter by Your Name**.

Name your Project

6. **Save** the project right away!

Click this icon.



There is **NO** autosave so remember to **Save** often.

If you weren't logged-in yet, Lynx will ask you to log-in first.

Saving the project... x

Please, [login](#)

UNDERSTANDING THE PREWRITTEN CODE

We've written some code to get you started in the Procedure Pane and have explained it here (read this and locate the lines of code as shown):

Save your project!

```
1 to setInitialValues
2   make "numSteps inputNumSteps
3   make "numKm inputNumKm
4   make "stepsPerKm inputNumSteps/inputNumKm
5   page2
6   calculateAndDisplay
7 end
```

1. In this procedure called **setInitialValues**, the number of steps and kilometres the user types into the textboxes is stored in variables called **numSteps** and **numKm** (lines 2 and 3).

2. A third variable called **stepsPerKm** calculates the user's rate (i.e., steps per km) (line 4).

3. The procedure then moves to **page2** in the Work Area ...

4. ...and calls another procedure named **calculateAndDisplay**. The **setInitialValues** procedure will not work right now because you have not yet written the **CalculateAndDisplay** procedure.



ADDING A BUTTON TO PAGE1

Create a *Calculate* button for our converter

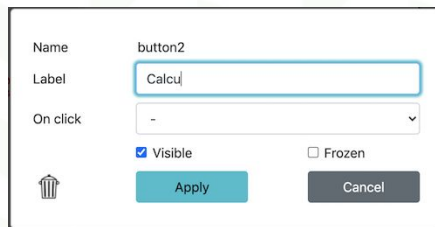
1. Click the **+** and choose **Button**.

A button named 'nothing' appears.

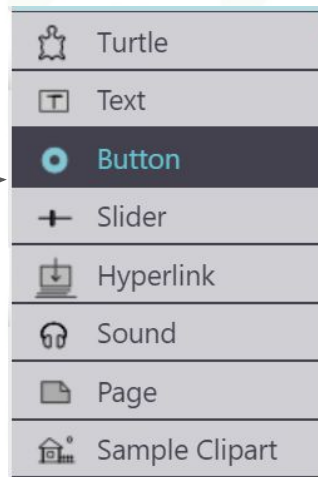
2. Right click on the button and change the **Label** to **Calculate**.
The **Label** is plain English!

3. Click on **Apply**. It won't work yet because you have not coded the **On Click** field.

4. Move and resize the button so that it looks nice in the **Work Area** of **Page1**.

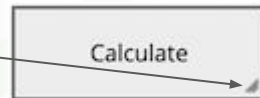


The dialog box shows the configuration for a button. The 'Name' field is 'button2'. The 'Label' field contains 'Calcul'. The 'On click' dropdown is set to '-'. There are checkboxes for 'Visible' (checked) and 'Frozen' (unchecked). At the bottom are 'Apply' and 'Cancel' buttons.



Move the button: Click anywhere on the button and hold to move it.

Resize it: Drag on the small triangle in the lower right corner that appears when you hover over it.

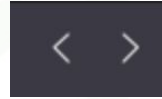


Save your project!



MOVE to PAGE2

Page2 has been set-up for you!



1. To move to the second page, use the arrows at the top beside the project name.

Terry Fox ran an average of 42 km per day. Using the data you entered on the previous page, here are some statistics if you ran the same distance!

Number of steps you took: 0 Number of kilometres you traveled: 0

Your rate (steps per km): 0



Number of steps you would take if you ran as far as Terry:

Day 1 (42 km)	0
Day 5 (210 km)	0
Day 10 (420 km)	0
Day 100 (4200 km)	0
Day 143 (6006 km)	0

Save your project!



CODING TIME - ADDING PROCEDURES

Create a new procedure

1. Click on the **keyboard** beside the Procedure Pane.



2. Type in the code, found on the right, into the Procedures Pane for the **calculateAndDisplay** procedure. Watch your spelling! The next two cards will help you to understand this code and complete it.

3. A **procedure** is a new command you teach Lynx for this project only.

```
to calculateAndDisplay
  setnumStepsDisplay :numSteps
  setnumKmDisplay :numKm
  setrateDisplay :stepsPerKm
  setday1 :stepsPerKm * 42 * 1
  setday5 :stepsPerKm * 42
  setday10 :stepsPerKm * 42
  setday100 :stepsPerKm * 42
  setday143 :stepsPerKm * 42
end
```



UNDERSTANDING THE CODE

Here's an explanation of the code.

1. The first two lines of code inside the procedure called **calculateAndDisplay** will display the number of steps and kilometres that you entered on **page1** into the textboxes on **page2**. The textboxes are called **numStepsDisplay** and **numKmDisplay**.

2. The third line will display your rate (steps per km) in the textbox called **rateDisplay**.

3. The remaining code will display the steps you would have taken if you ran as far as Terry Fox did on each of the corresponding total days. He ran for 143 days!

```
to calculateAndDisplay
  setnumStepsDisplay :numSteps
  setnumKmDisplay :numKm
  setrateDisplay :stepsPerKm
  setday1 :stepsPerKm * 42 * 1
  setday5 :stepsPerKm * 42
  setday10 :stepsPerKm * 42
  setday100 :stepsPerKm * 42
  setday143 :stepsPerKm * 42
end
```



CODING TIME (continued)

Completing the Code...

1. Terry Fox ran 42 kilometres per day.

After one day, we multiply

- your rate (`stepsPerKm`) by the
- number of kilometers (42) and then
- by the number of days (1)...

`setday1 :stepsPerKm * 42 * 1`



2. `setday5` to `setday143` are incomplete! You will need to add something to them to reflect what you ran after 5 days, 10 days, 100 days and 143 days.

```
to calculateAndDisplay
  setnumStepsDisplay :numSteps
  setnumKmDisplay :numKm
  setrateDisplay :stepsPerKm
  setday1 :stepsPerKm * 42 * 1
  setday5 :stepsPerKm * 42
  setday10 :stepsPerKm * 42
  setday100 :stepsPerKm * 42
  setday143 :stepsPerKm * 42
end
```

Tip - The asterisk (*) means to **multiply** when we are coding. After one day, we multiplied by 1 (* 1). What would you add for 5 days?



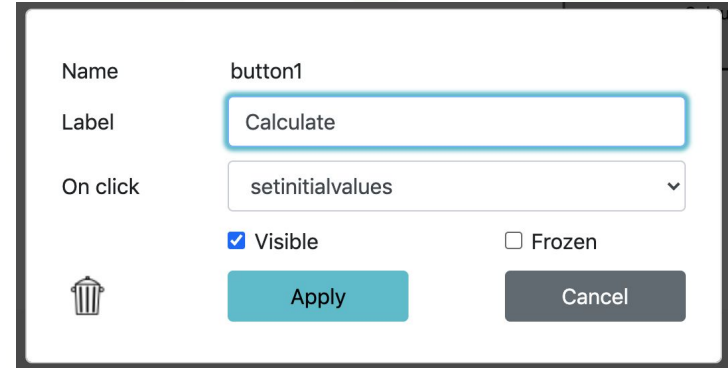
CODING THE CALCULATE BUTTON TO BE INTERACTIVE

We need to assign a procedure to the *Calculate* button.


1. Right-click on the **Button** called **Calculate** in the Work Area.

2. Click on the **On click** drop down menu. Choose **setInitialValues**.

3. Click **Apply**. Now, when a user clicks this button the **setInitialValues** procedure will run.



The screenshot shows a configuration window for a button. It has three main sections: 'Name' with the value 'button1', 'Label' with a text field containing 'Calculate', and 'On click' with a dropdown menu showing 'setinitialvalues'. Below these are two checkboxes: 'Visible' (checked) and 'Frozen' (unchecked). At the bottom left is a trash icon, and at the bottom right are 'Apply' and 'Cancel' buttons.

Name	button1
Label	<input type="text" value="Calculate"/>
On click	<input type="text" value="setinitialvalues"/>
<input checked="" type="checkbox"/> Visible <input type="checkbox"/> Frozen	
	<input type="button" value="Apply"/> <input type="button" value="Cancel"/>

Save your project!



TESTING THE PROGRAM

We will enter values into the text boxes to see if our program works!

1. To test the program, return to **page1**. Use the arrows at the top beside the project name.



2. For example, type **5000** for the number of steps you ran and **2** for the number of kilometres.

3. Click on the **Calculate** button

4. **Page2** should appear now. Check that the information about the number of steps and the number of kilometers travelled is correct.

5. If you have a bug (an error), determine on which line the bug is located and try to debug!

Terry Fox ran an average of 42 km per day. Using the data you entered on the previous page, here are some statistics if you ran the same distance!

Number of steps you took: 5000 Number of kilometres you traveled: 2

Your rate (steps per km):

2500



Number of steps you would take if you ran as far as Terry:

Day 1 (42 km)	105000
Day 5 (210 km)	525000
Day 10 (420 km)	1050000
Day 100 (4200 km)	10500000
Day 143 (6006 km)	15015000

Save your project!

Share your Converter Project

Send it to friends or publish it!

1. Click the **Share** icon.



2. Click **Create**.

3. A URL will be generated here.

4. Click on **Copy Link** and send it to friends.

5. Add a **Preview Image** to give your project a Visual identifier

6. Will you allow others to modify your App? If yes, unclick **Private**. Your original will remain!

Share this project...

Sharing Options [Project Properties](#)

Link Sharing is OFF. [Create](#) a link to share.

URL [To create a link to share, click Create](#)

[Copy link](#) [E-mail](#) [Twitter](#) [Facebook](#)

Embed on your site [To see the code, click Create](#)

[Copy](#)



CHALLENGE YOURSELF!

Check out these additional enhancements/challenges...

Enhancing your Terry Fox Calculator Program:

*Spruce up your Work Area by adding colour to your background. Hint: type **setbg** in the Command Centre and use any number between 1 and 139. For example **setbg 12**.*

Apply Your New Learning - Challenge Yourself to Make...

- a kilometers to mileage converter program
- a unit or currency conversion application (e.g., Canadian to US dollars, kilograms to pounds).

The possibilities are endless!



*Help is available! Click on the **Book** icon or **Help** Widget in the bottom left corner of Lynx, or select **Help** on the homepage and look at the **User Guides**.*

*In **User Guides**, there is a **Lynx Colour Chart** or type **Colour Chart** in the **Help** widget.*



CODEtoLEARN

Credits

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A program of



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