Homework – NXC Programming Intro and Studio Casters

For the questions below, provide the code (e.g. cut-and-paste **your** NXC code into a DOC (don't cut-and-paste from my notes) and include the photo (e.g. as JPEG) or YouTube video (e.g. provide URL) as requested.

If "Best Practices" e.g. proper filenames, descriptive variables, opening comments, braces, braces with comments, and closing are missing, then there **20% will be deducted for each**.

1. Refer to Hands-on Lab Lego Programming – BricxCC Basics. Use "Best Practices" and do the following: **(1)** provide the NXC code; **(2)** provide a photo or YouTube URL of the Brick's output (5 points each)

   A. Introduce a string variable as follows and display it at position x=10, y=16

   ```
   string strMessage;
   strMessage = "Bye Cruel World";
   ```

   Provide a photo of the output

   B. Look up `PlaySound`. Execute a program that displays `Hello World`, waits 2 seconds, plays the error sound and then displays `Bye Cruel World` below the `Hello World` message. Provide the Youtube URL demoing this. If your Brick doesn't provide sound, then note this in your answer.

   C. Look up `ClearScreen`. Rewrite 1-A so that the LCD is cleared before the Bye Cruel World message is displayed. Provide the Youtube URL demoing this works.

   D. Type, compile and run `displaySquareAndSquareRoot1_0.nxc` from Concept 2A Variables. Provide the Youtube URL demoing this works.

   E. See the code in Concept 2B `for` statement. Use it to create a new program using Best Practices (e.g. comments, braces, declarations and initializations). Provide the Youtube URL demoing this works.

   F. Use NXC help to learn about `ButtonPressed`. Type, compile and run `displaySquareAndSquareRoot1_1.nxc` given in Concept 2D `if` statement. Provide the Youtube URL demoing this works.

2. Write an NXC program that converts your age (in years) and displays your age in the number of days. Don't worry about fractional years and leap years. For example, if you are 10 years old, then the Brick should compute (365 days per year) and display 3650 days old. Hint: use **`int`** or **`long`** for variables. Include the NXC code and a photo of the NXT Brick displaying the result (10 points)

3. Write a program that uses the variable days to hold a value from 0 to 31. **Use a `for` loop** to display days and its equivalent in weeks and days. For example, 8 days would display 1 week and 1 day. Include the NXC code and video (YouTube URL) of the NXT Brick displaying the result (10 points)

4. Pickand construct 4 assemblies from the 10 below. Note 1: The parts in the assemblies below may not be included in your Mindstorms kit – so make substitutions. This will help you become more comfortable with building assemblies. Note 2: You're encouraged to try the others and build experience, but only 4 are required. For each assembly, provide (1) the

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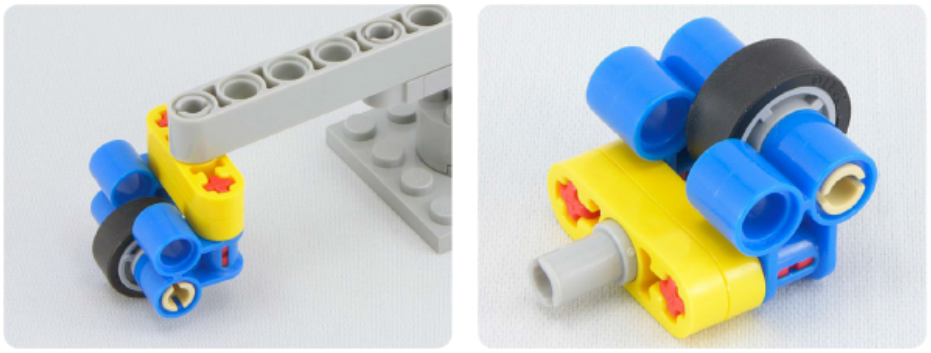
Studio step-by-step Build Plan and BOM; (2) a URL to the YouTube video demonstrating the real-world Lego assembly your constructed; (3) a photo (and URL it's from) or YouTube URL to a caster that is similar to the one your picked (10-points each).

#30



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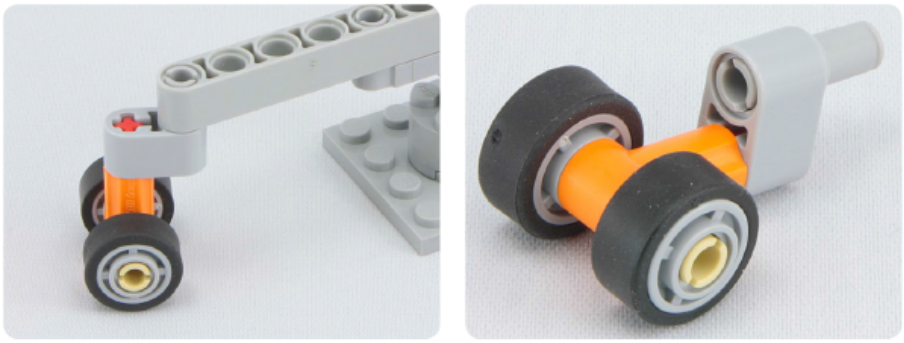

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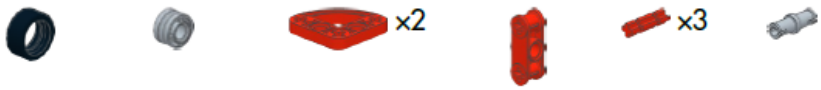

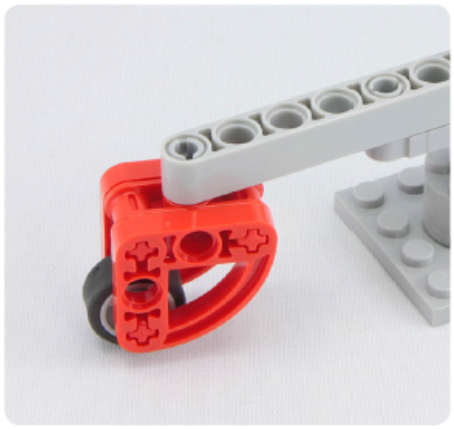

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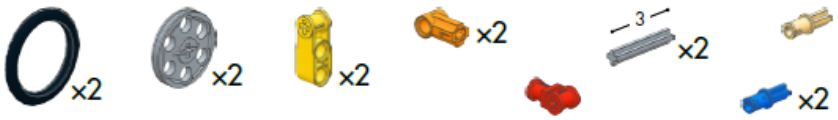

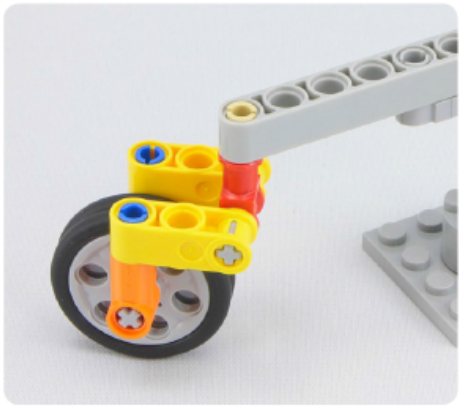

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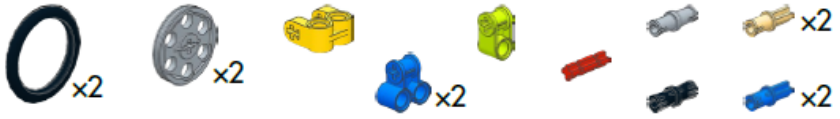

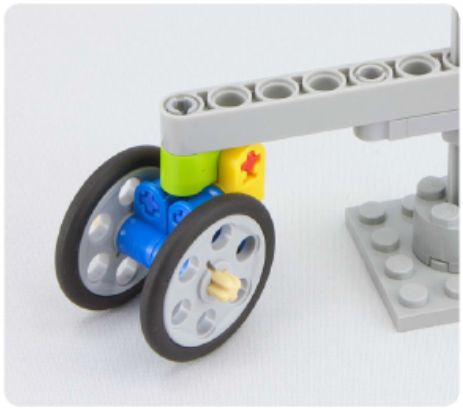

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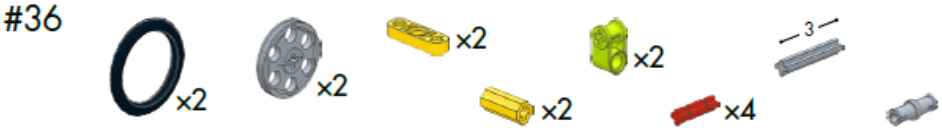

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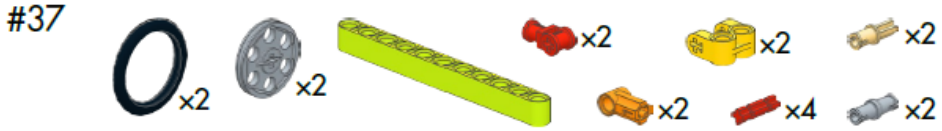

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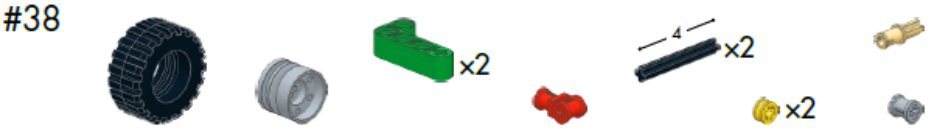

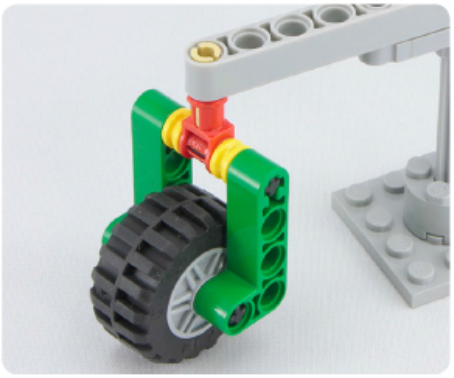

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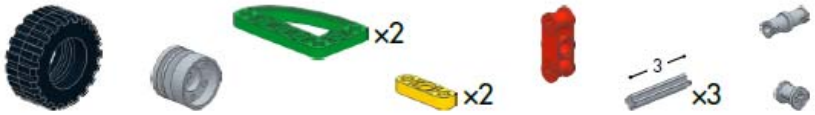

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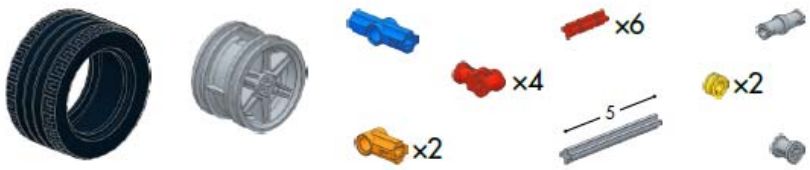

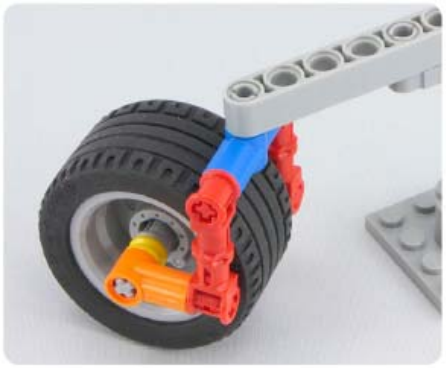

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