KIBO Project Rubric

KIBO Robotics Kit

The kit contains*:

- Robot body
- **Modules:** wheels (2), motors (2), lightbulb, sound sensor, light sensor, distance sensor, sound recorder
- **Blocks:** Begin, End, Forward, Backward, Turn Right, Turn Left, Shake, Beep, Begin Repeat, End Repeat, Spin, Red Light On, White Light On, Blue Light On, Wait for Clap, Begin If, End If, Sing, Play Circle, Play Triangle, Play Square
- **Parameters:** repeat numbers (4), repeat sensors (4), if sensors (4)
- **Customization:** stationary stage, rotating stage

*Contents may vary depending on the type of kit purchased

Rubric Criteria

	0 points	1 point	2 points	3 points	4 points
A. Programming Concepts					
A1. Syntactical Accuracy	**No program** created	Nonfunctional program due to **missing Begin/End block**	Nonfunctional program due to **missing or misplaced Begin/End Repeat or If blocks**	Nonfunctional due to **missing or misplaced parameter**	**Functional** program created
A2. Repeats	**No repeat blocks** used	Repeat attempted but **missing or misplaced the Begin/End and/or parameter** or **no blocks in-between Begin/End blocks**	**At least one successful repeat loop** with number parameter	**At least one successful repeat loop** with sensor parameters	At least one successful repeat loop as part of **nested statement**
A3. Conditionals	**No if blocks** used	Conditional attempted but **missing or misplaced the Begin/End and/or parameter**	Conditional attempted correctly but **no blocks in-between Begin/End blocks**	**At least one successful conditional statement** with sensor parameter	At least one successful conditional statement as part of **nested statement**
A4. Module Use	**No modules attached** to the KIBO body	**No correspondence** or **only wheels/motors attached**	**At least one module with correspondence** to the program (in addition to wheels and motors)	**All attached modules are purposeful** and correspond to the constructed program	All attached modules are purposeful **and activated purposefully** when program is running
A5. Data	**No use of sound recorder**	**Sound recorder used incorrectly** (no sound)	**One successfully recorded sound** with sound recorder	**2+ successfully recorded sounds** with sound recorder	**Subroutines** used correctly
B. Project Design Elements					
B1. Sequencing	**3 or fewer blocks** used	**4-5 blocks** used	**6-9 blocks** used	**10-14 blocks** used	**15+ blocks** used
B2. Block Variety	No program or **only Begin/End blocks** used	**1 type** of block used	**2-3 different types** of blocks used	**4-5 different types** of blocks used	**6 types** of blocks used (blue, yellow, orange, gray, lavender, purple)
B3. Robot Customization	**No customization or decorations**	Use of existing KIBO extension modules (ex. platform) as decoration; **no personalized customization**	**1 piece of decoration** added; simple customization	**Personalized arts & crafts and/or building materials** attached to robot	**Highly** personalized arts & crafts and/or building materials **securely attached** to robot
B4. Setting	**No other project elements** added	**1 other project element** added (apart from robot/program)	**2 other project elements** added (apart from robot/program)	**3 other project elements** added (apart from robot/program)	**4+ other project elements** added (apart from robot/program)
B5. Coordination	**No background music or dance, Wait for Clap block, or use of multiple robots**	Used **Wait for Clap block as the final block** before End; no synchronized music or dance	Used Wait for Clap block in **middle of the program**; background music or dance does not fully match program	**Used background music/dance strategically** to match program	**Multiple KIBO robots running synchronously** with background music or dance

Step-by-Step Scoring Guide

Step 1:	**Step 2:**	**Step 3:**	**Step 4:**
Add up all of the A scores: _____ out of 20 Then multiply by 1.5: **_____ out of 30**	Add up all of the B scores: **_____ out of 20**	Add scores from Steps 1 and 2: **_____ out of 50**	Identify project's level of complexity: ☐ **Budding (0-9)** ☐ **Developing (10-19)** ☐ **Proficient (20-29)** ☐ **Advanced (30-39)** ☐ **Distinguished (40-50)**

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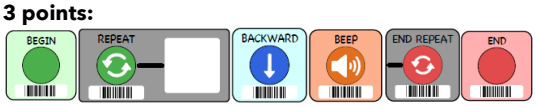
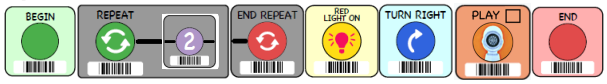
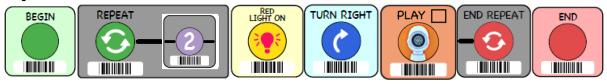
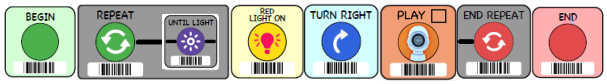
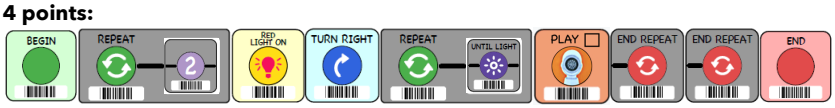
Scoring Guidelines and Examples

A. Programming Concepts	
A1. Syntactical Accuracy *Is the program functional? When the blocks are scanned in order from left to right, the robot will be able to perform the programmed actions without beeping an error message.*	**0 points:** *If there is no program created, the project receives 0 points in this category.*
	1 point:  *This program is missing an End block, so the project receives 1 point in this category.*
	2 points:  *This program has an attempted repeat loop but the Start Repeat and parameter blocks are missing, so the project receives 2 points in this category.*
	3 points:  *This program has an attempted repeat loop but is missing a parameter, so the project receives 3 points in this category.*
	4 points:  *This program has no syntax errors, so the project receives 4 points in this category.*
A2. Repeats *Does the program utilize any repeat blocks? If so, to what complexity are they used?*	**0 points:**  *This program does not use any repeat blocks, so the project receives 0 points in this category.*
	1 point:  *This program has an attempted repeat loop but there are no blocks in-between the repeat blocks, so the project receives 1 point in this category.*
	2 points:  *This program has a successful repeat loop with a number parameter, so the project receives 2 points in this category.*
	3 points:  *This program has a successful repeat loop with a sensor parameter, so the project receives 3 points in this category.*
	4 points:  *This program has a repeat loop with a sensor parameter nested inside of a repeat loop with a number parameter, so the project receives 4 points in this category.*
A3. Conditionals *Does the program utilize any if blocks? If so, to what complexity are they used?*	**0 points:**  *This program does not use any if blocks, so the project receives 0 points in this category*
	1 point: 

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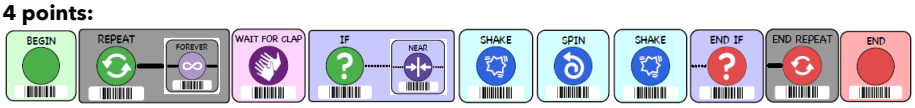
	This program has an attempted if statement but the parameter is missing, so the project receives 1 point in this category
	2 points:  *This program has an if statement but there are no blocks in-between the if blocks, so the project receives 2 points in this category.*
	3 points:  *This program has a successful if statement with a sensor parameter, so the project receives 3 points in this category.*
	4 points:  *This program has an if statement nested inside of a repeat loop with a number parameter, so the project receives 4 points in this category.*
A4. Module Use *What kinds of modules were attached to the ports on the KIBO body? Do these attached modules have any correspondence to the actual program? For instance, a sound sensor used without a Wait for Clap block does not display correspondence.*	**0 points:** *A KIBO body without anything attached receives 0 points in this category.*
	1 point: https://youtu.be/w5gh0VjjdxI (7:52) *The KIBO body has an attached lightbulb, sound sensor, and wheels/motors but only the wheels/motors correspond to the constructed program, so the project receives 1 point in this category.*
	2 points: https://drive.google.com/file/d/1jKEqNLcERQgWsuzuAy7v5vtUireIGFvb/view?usp=sharing (0:37) *The KIBO body has an attached lightbulb, sound/distance/light sensors, and wheels/motors but only the lightbulb and wheels/motors correspond to the program, so the project receives 2 points in this category.*
	3 points: https://drive.google.com/file/d/1jKEqNLcERQgWsuzuAy7v5vtUireIGFvb/view?usp=sharing (2:35) *All attached modules (lightbulb and wheels/motors) correspond to the constructed program, so the project receives 3 points in this category.*
	4 points: https://drive.google.com/file/d/12FI4vhjS5GgUkwY5ZXojnR0dv67ngpVx/view?usp=sharing (0:27) *All attached modules (lightbulb, sound sensor, and wheels/motors) correspond to the constructed program and are appropriately activated (e.g., clap), so the project receives 4 points in this category.*
A5. Data *Does the child exhibit an understanding of information storage in their programming? For instance, the child records their own sounds using the sound recorder blocks/module or makes use of subroutines, which are blocks used to substitute a set of other blocks.*	**0 points:**  *There are no recorded sounds or display of data storage, so the project receives 0 points in this category.*
	1 point:  ***+ no recorded sound*** *The program has one sound recorder block but no sound plays, so the project receives 1 point in this category*
	2 points:  *The program has one sound recorder block with sound playing, so the project receives 2 points in this category*
	3 points:  *The program has two sound recorder blocks with sound playing, so the project receives 3 points in this category.*
	4 points: 

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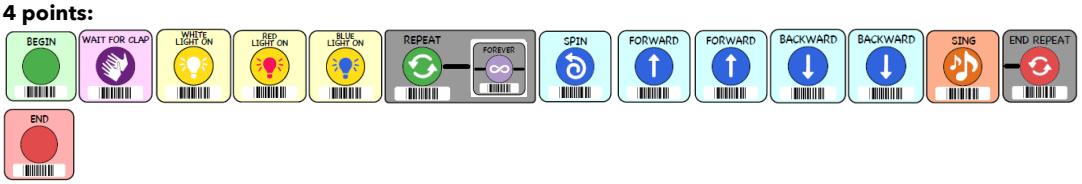
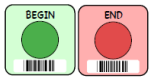
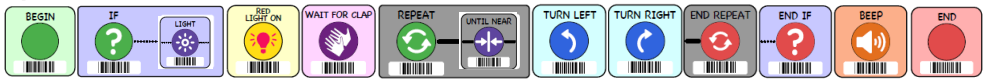
	In which  is used as a substitute to represent this sequence of blocks:  *The program has at least two recorded sounds and the backward block is used in place of a subroutine, so the project receives 4 points in this category.*
B. Project Design Elements	
B1. Sequencing *How many blocks (including parameters) does the child use to construct their program?*	**0 points:**  *This program has 3 blocks, so the project receives 0 points in this category.*
	1 point:  *This program has 4 blocks, so the project receives 1 point in this category.*
	2 points:  *This program has 8 blocks, so the project receives 2 points in this category.*
	3 points:  *This program has 11 blocks, so the project receives 3 points in this category.*
	4 points:  *This program has 15 blocks, so the project receives 4 points in this category.*
B2. Block Variety *What kinds of blocks does the child use to construct their program? There are six kinds of blocks, each of which is associated with a particular color: blue, yellow, orange, gray, lavender, and purple.*	**0 points:**  *Only Begin/End blocks were used, so the project receives 0 points in this category.*
	1 point:  *This program has 1 type of block, so the project receives 1 point in this category.*
	2 points:  *This program has 2 types of blocks, so the project receives 2 points in this category.*
	3 points:  *This program has 4 types of blocks, so the project receives 3 points in this category.*
	4 points:  *This program has 6 types of blocks, so the project receives 4 points in this category.*
B3. Robot Customization	**0 points:** https://drive.google.com/file/d/1jKEqNLcERQgWsuzuAy7v5vtUireIGFvb/view?usp=sharing (1:30) *The KIBO robot is not decorated, so the project receives 0 points in this category.*
	1 point:

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How is the robot decorated and customized with arts and crafts and/or building materials? The child will be able to test their creations so that decorations are securely attached to the robot.	https://drive.google.com/file/d/1_71_Au6cCp5QJbJkI9Kt9kxUVd1_KgtP/view?usp=sh (0:14) *There is a flagpole attached to the KIBO robot, so the project receives 1 point in this category.*
	2 points: https://drive.google.com/file/d/1HHeCGRmjFArjxE_Lbnmou8EcFw9RwdJc/view?usp=sharing (0:26) *There is a simple decoration attached to the KIBO robot, so the project receives 2 points in this category.*
	3 points: https://youtu.be/KZ5fjy9xulg (1:23) *There is a personalized decoration attached to the KIBO robot, so the project receives 3 points in this category.*
	4 points: https://youtu.be/KZ5fjy9xulg (0:59) *There is a highly personalized decoration securely attached to the KIBO robot, so the project receives 4 points in this category.*
B4. Setting *What (if any) additional project elements are included as part of the final project? Examples of project elements might include singing or dancing along, playing background music, or displaying some type of visual poster alongside their robotic creations.*	**0 points:** https://drive.google.com/file/d/1jKEqNLcERQgWsuzuAy7v5vtUireIGFvb/view?usp=sharing (1:30) *There are no extra project elements, so the project receives 0 points in this category.*
	1 point: https://youtu.be/KZ5fjy9xulg (1:44) *There is one extra project element (pieces of paper representing snow), so the project receives 1 point in this category.*
	2 points: https://youtu.be/yg3ymfBFRbM (0:18) *There are two extra project elements (two illustrations), so the project receives 2 points in this category.*
	3 points: https://youtu.be/KZ5fjy9xulg (0:59) *There are three extra project elements (three illustrations taped to the floor, representing different parts of the story), so the project receives 3 points in this category.*
	4 points: https://drive.google.com/file/d/1HQxrYvJZZRXlT5zqi24FWZ490kdls-PN/view?usp=sharing (1:15) *There are at least four extra project elements (binoculars, background story, forest backdrop, backpack, etc.), so the project receives 4 points in this category.*
B5. Coordination *How are project elements used purposefully to enhance synchronization and coordination? For example, the child uses a Wait for Clap block strategically to align the robot's actions with a particular song or dance.*	**0 points:** https://drive.google.com/file/d/1jKEqNLcERQgWsuzuAy7v5vtUireIGFvb/view?usp=sharing (1:30) *There is no Wait for Clap block or project elements requiring coordination, so the project receives 0 points in this category.*
	1 point: https://youtu.be/KZ5fjy9xulg (1:44) *The Wait for Clap block was not activated as it was close to the end of the program, so the project receives 1 point in this category.*
	2 points: https://youtu.be/yg3ymfBFRbM (0:18) *The Wait for Clap block is located in the middle of the program, so the project receives 2 points in this category.*
	3 points: https://drive.google.com/file/d/1_71_Au6cCp5QJbJkI9Kt9kxUVd1_KgtP/view?usp=sh (0:14) Although Wait for Clap block is at the end of the program, the other blocks strategically match the actions of the Hokey Pokey dance, so the project receives 3 points in this category.
	4 points: https://youtu.be/yg3ymfBFRbM (0:24) Multiple robots are running simultaneously in this project, so the project receives 4 points in this category.

KIBO Blocks