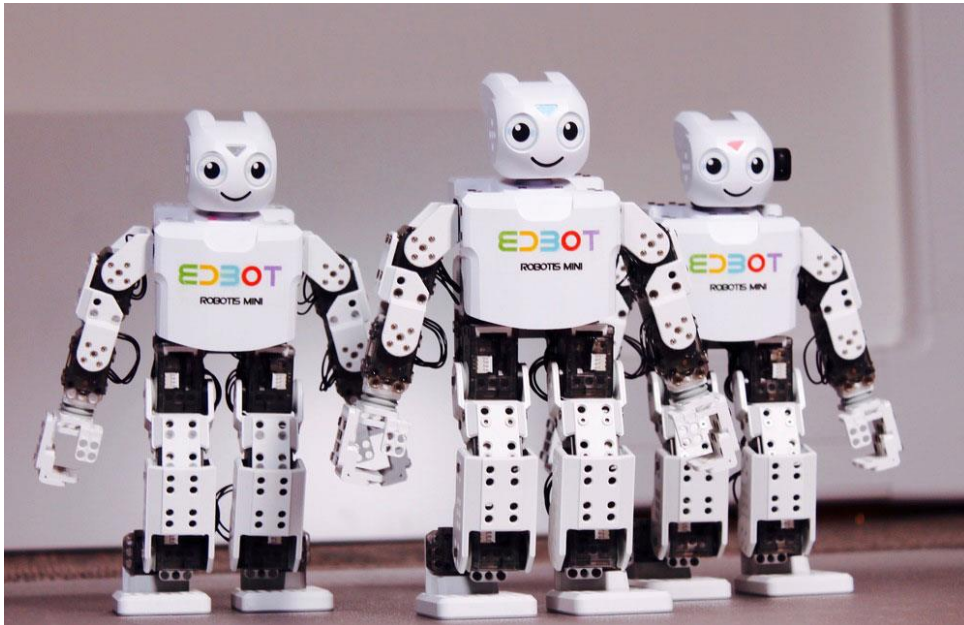


# Edbot Advanced

## Answer Book



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## Introduction

This answer booklet has been produced to give the teacher some help on the questions and problems which are included in the Edbot Advanced PowerPoint presentations and worksheets. The answers within this booklet only cover the questions on the PowerPoint presentations where there is a definite answer that is not included within the presentation itself.

## Lesson 1 – Recap the basics

<b>Starter</b>	<ol style="list-style-type: none"><li>1. A robot that has similar characteristics to a human body, i.e. arms, legs and a head.</li><li>2. More Blocks.</li><li>3. Click on the green flag, press the correct key (if set up) or click on the sprite (if set up).</li><li>4. A small motor that allows parts of Edbot to move.</li></ol>
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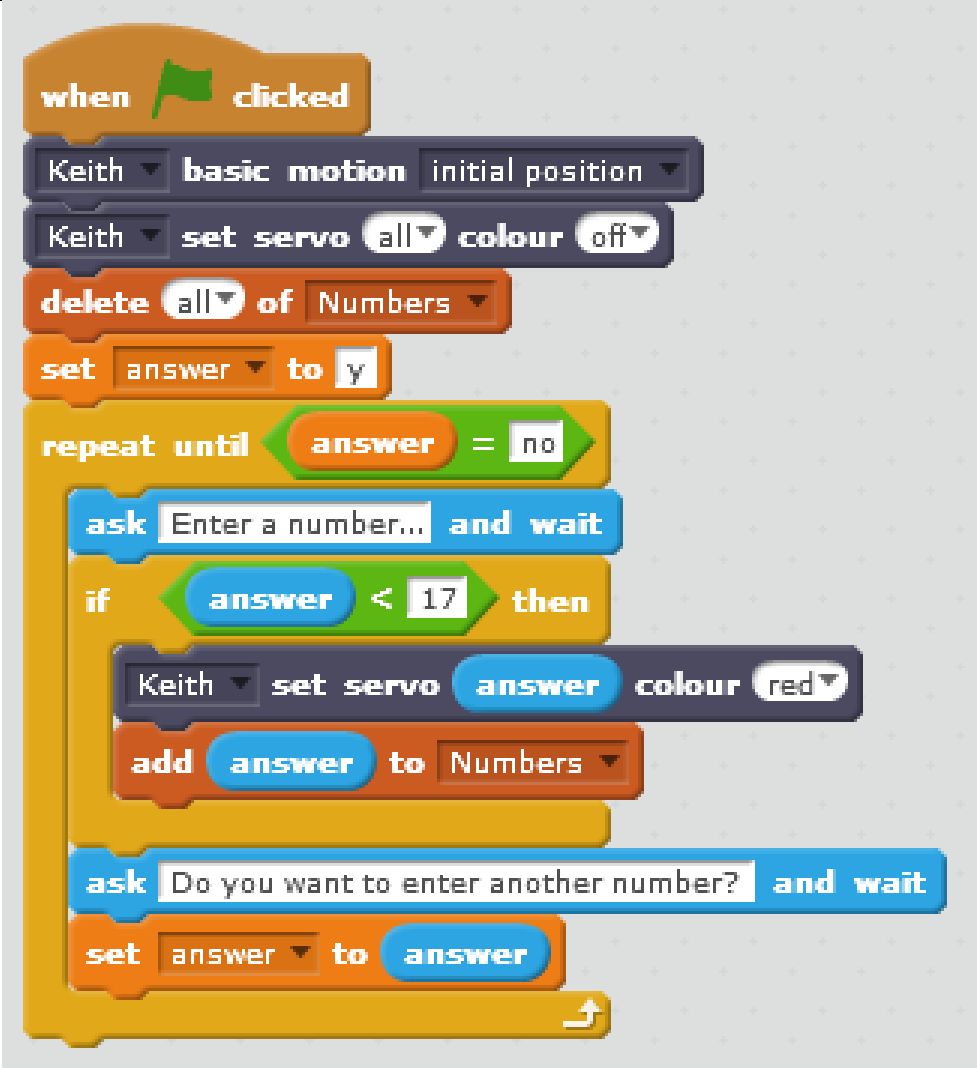
## Lesson 2 – Questions

<p><b>Starter</b></p>	<ol style="list-style-type: none"> <li>1. When the green flag is clicked it will make Edbot stand in the initial position. It will pick a random number between 1 and 10 and store that in a variable called <b>num1</b>. It will then pick a random number between 5 and 12 and store that in a variable called <b>num2</b>. It will then multiply those two numbers together and store that answer in a variable called <b>total</b>. It will then ask what is the <b>total</b> divided by <b>num1</b>. This will make sure the answer is a whole number (it will be <b>num2</b>). It will then check, if the answer that the user enters is equal to <b>num2</b> and if it is Edbot will do a dance. If they get the answer wrong Edbot will do push-ups. This will then be repeated until 5 questions have been asked.</li> <li>2. Add another variable called <b>score</b> that is set to 0 at the start of the program. Add 1 to the <b>score</b> each time they get the answer correct. At the end of the program tell the user what the <b>score</b> is.</li> </ol>
<p><b>Slide 6</b></p>	<ol style="list-style-type: none"> <li>1. You would create your own block to define a set of instructions which you would need to repeat at different times in a program. By defining your block you can easily insert that code into your program in multiple locations without having to insert lots of lines. It is also easy to update that block, if necessary, as it is stored in one central location.</li> <li>2. Click on More Blocks and select Make a Block. Enter a name and then create the code. To use the code in your script drag the purple name block into your main program.</li> </ol>
<p><b>Slide 7</b></p>	<p>It will make Edbot walk forwards. It will check if there is an object in front of the distance sensor. If it detects something that is 20cm or closer, Edbot reverses and turns right a random number of times (between 1 and 3) before continuing to walk forwards. The idea behind the get_distance block is that sometimes sensors do not take accurate readings so it will take 5 samples over half a second and work out the average of those 5 as a more accurate distance.</p>
<p><b>Slide 8</b></p>	

## Lesson 3 – Variables

<p><b>Starter</b></p>	<ol style="list-style-type: none"> <li>1. When the green flag is clicked it will make Edbot stand in the initial position. It will switch all the servo lights off and set a variable called <b>light</b> to 1. It will then change the lights on the servo whose number equals the variable to red and add 2 to the value. It will wait 2 seconds and will keep doing this until the variable called <b>light</b> is over 16 and then will stop. In effect this will change all the lights down one side of Edbot to red.</li> <li>2. A variable is a value you can change while the program is running.</li> <li>3. Light.</li> <li>4. In Data, click on “Make a Variable”, give it a name and click on OK.</li> </ol>
<p><b>Slide 4</b></p>	<p>When the green flag is clicked it will ask the user to enter 3 numbers and it will add them together. After the three numbers have been added it will ask for the total. If the user is correct Edbot will walk forwards and give them a message saying they are correct. If they are wrong Edbot will walk backwards and tell them they are wrong and what the total should be.</p>
<p><b>Slide 8</b></p>	<div> </div> <ol style="list-style-type: none"> <li>1.</li> <li>2. So it keeps repeating the code and doesn't stop after one loop.</li> </ol>
<p><b>Slide 10</b></p>	<ol style="list-style-type: none"> <li>1. To allow you to insert repetitive lines of code.</li> <li>2. In “More Blocks”, click on “Make a Block”.</li> <li>3. Drag the purple block into your code.</li> </ol>

## Lesson 4 – Lists

<p><b>Slide 8</b></p>	<ol style="list-style-type: none"> <li>1. A variable can only store a single value but a list can store multiple values.</li> <li>2. In Data, select “Make a List”.</li> <li>3. Add “thing” to Listname.</li> <li>4. Delete all of Listname.</li> </ol>
<p><b>Slide 9</b></p>	<p>At the start of the program we added the line to clear the list.  <b>Extension Activity:</b></p>  <p>The code for Slide 9 is as follows:</p> <pre> when green flag clicked   Keith basic motion initial position   Keith set servo all colour off   delete all of Numbers   set answer to y   repeat until answer = no     ask Enter a number... and wait     if answer &lt; 17 then       Keith set servo answer colour red       add answer to Numbers     ask Do you want to enter another number? and wait     set answer to answer   </pre>
<p><b>Slide 10</b></p>	<p>A completed version of the file is included in the Teacher’s folder called L4_DanceListANSWERS.sb2.</p>

## Lesson 5 – More advanced programs

Slide 14

when space key pressed

Keith basic motion initial position

Keith set servo positions 1/290/2/10

when up arrow key pressed

Keith basic motion crouch

Keith set servo positions 1/290/2/10

Keith set servo positions 5/100/6/200

when a key pressed

Keith fight motion left hook

Keith set servo positions 1/290

when 9 key pressed

Keith basic motion initial position

Keith set servo positions 1/50/2/50

when clicked

Keith basic motion initial position

## Lesson 6 – Put it all together

Slide 5

Standard Answer:

```
when clicked
  delete all of answers
  Keith set servo all colour off
  Keith set motion lights off
  Keith basic motion initial position
  repeat 5
    set num1 to pick random 10 to 20
    set num2 to pick random 10 to 20
    set total to num1 + num2
    ask join num1 join + join num2 = and wait
    if answer = total then
      add Correct to answers
      Keith set servo all colour green
      wait 0.2 secs
      Keith greet motion bow 1
    else
      add Wrong to answers
      Keith set servo all colour red
      wait 0.2 secs
      Keith basic motion crouch
      Keith basic motion stand
  Keith set servo all colour off
```

Note – “set motion lights off” stops the Edbot servo lights changing colour as Edbot performs a pre-defined motion.

The answer for the extension activity can be found on the next page.



### Extension Activity – a possible answer:

```
when clicked
  set score to 0
  delete all of answers
  Keith set servo all colour off
  Keith set motion lights off
  Keith basic motion initial position
  repeat 5
    set num1 to pick random 10 to 20
    set num2 to pick random 10 to 20
    set total to num1 + num2
    set question to join num1 join + join num2 =
    Keith say question
    ask question and wait
    if answer = total then
      set data to join question join answer join Correct
      add data to answers
      change score by 1
      Keith set servo all colour green
      wait 0.2 secs
      Keith greet motion bow 1
      wait 1 secs
    else
      set data to join question join answer join Wrong
      add data to answers
      Keith say join The correct answer is total
      say join The correct answer is total for 3 secs
      Keith set servo all colour red
      wait 0.2 secs
      Keith basic motion crouch
      Keith basic motion stand
      wait 2 secs
      Keith set servo all colour off
  Keith say join You scored join score correct
  say join You scored join score correct for 4 secs
```

Slide 5