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# Raspberry Pi Home Automation with Arduino

*Second Edition*

Unleash the power of the most popular microboards to build  
convenient, useful, and fun home automation projects

Andrew K. Dennis

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**Andrew K. Dennis**



BIRMINGHAM - MUMBAI

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## *Second Edition*

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I would like to thank my wife, Megan, for supporting me throughout this project, and my parents for their support with my interest in technology while I was growing up.

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---

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I would like to thank Philippa for believing that writing and tinkering would bring rewards in the end.

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# Table of Contents

<b>Preface</b>	<b>1</b>
<b>Chapter 1: An Introduction to the Raspberry Pi, Arduino, and Home Automation</b>	<b>7</b>
<b>History and background of the Raspberry Pi</b>	<b>8</b>
<b>History and background of the Arduino</b>	<b>9</b>
Raspberry Pi to Arduino shield connection bridge	11
Soldering	13
Creating software for the Arduino	13
<b>What is home automation?</b>	<b>14</b>
History of home automation	14
X10 – a standard is born	15
The dot-com boom and open source – a new set of technologies	16
Commercial products	17
Arrival of the Raspberry Pi	18
<b>Summary</b>	<b>18</b>
<b>Chapter 2: Getting Started – Setting Up Your Raspberry Pi and Arduino</b>	<b>19</b>
<b>The SD card – our Raspberry Pi's storage device</b>	<b>19</b>
<b>Preinstalled SD card versus a blank SD card</b>	<b>20</b>
<b>A note on Noobs</b>	<b>20</b>
<b>Downloading Raspbian</b>	<b>21</b>
<b>Setting up the SD card and installing Raspbian</b>	<b>21</b>
Raspberry Pi SSH setup	22
<b>Arduino</b>	<b>23</b>
Installing the IDE on your Raspberry Pi	23
A quick guide to the Arduino IDE	23
Using the Arduino to Raspberry Pi connection bridge	24
<b>Summary</b>	<b>26</b>



---

<b>Chapter 3: Central Air and Heating Thermostat</b>	<b>27</b>
<b>Safety first</b>	<b>28</b>
<b>Introducing the thermostat</b>	<b>28</b>
<b>Setting up our hardware</b>	<b>29</b>
Adding the Ethernet shield	30
Relays	30
Connecting the thermistor	31
<b>Setting up our software</b>	<b>32</b>
Thermostat software	33
<b>Testing our thermostat and fan</b>	<b>37</b>
Attaching the fan	37
Starting your thermostat application	37
Testing the JSON response	38
<b>Next steps</b>	<b>39</b>
Attaching the device to your heating system or a similar appliance	40
Adding a potentiometer	41
Adding an LCD screen	42
<b>Summary</b>	<b>43</b>
<b>Chapter 4: Temperature Storage – Setting Up a Database to Store Your Results</b>	<b>45</b>
<b>SSH</b>	<b>46</b>
<b>SQLite</b>	<b>48</b>
Installing SQLite Version 3.x	48
Creating a database	49
A table to record our temperature	50
A table to record our rooms	50
Writing SQL queries	50
Creating a Python application to write to our database	52
Checking the results	55
Adding a cron job	55
<b>HTSQL</b>	<b>57</b>
Downloading HTSQL	57
Configuring HTSQL	58
<b>Summary</b>	<b>60</b>
<b>Chapter 5: Parcel Delivery Detector</b>	<b>61</b>
<b>Wiring up the parcel sensor</b>	<b>62</b>
An introduction to resistors	62
Pressure sensor – force-sensing resistor	62
10K ohm resistor	63

---

Connecting the components to the Arduino	63
Writing our software	64
<b>Updating the Raspberry Pi database</b>	<b>67</b>
<b>A web-based Python application</b>	<b>67</b>
Setting up SMTP	68
Our Python application	68
Starting the web service	71
Testing our application	72
<b>Installing the parcel detector</b>	<b>72</b>
Testing the complete setup	74
<b>Next steps</b>	<b>74</b>
Upgrading from Ethernet to a wireless system	74
Checking the shipping details	74
Replacing the pressure sensor with a camera and image recognition	75
<b>Summary</b>	<b>75</b>
<b>Chapter 6: Curtain Automation – Open and Close the Curtains Based on the Ambient Light</b>	<b>77</b>
<hr/>	
<b>Introduction to the Arduino bridge shield</b>	<b>78</b>
Installing arduPi	78
Photoresistors	79
Motor shield and motors	79
<b>Setting up the photoresistor</b>	<b>80</b>
<b>Wiring up the components</b>	<b>80</b>
<b>Testing the photoresistor with software</b>	<b>81</b>
Makefiles	83
<b>Setting up the motor shield</b>	<b>84</b>
<b>Wiring the components to the shield</b>	<b>84</b>
<b>Curtain control application</b>	<b>85</b>
Pulse width modulation	85
Threads	85
Writing our code	86
<b>Connecting to your blinds/curtains</b>	<b>90</b>
Setting the timing	90
Attaching the hardware	90
Debugging problems	91
<b>Next steps</b>	<b>92</b>
Mounting the photoresistor outdoors	92
Adding a stepper motor	92
<b>Summary</b>	<b>93</b>

<b>Chapter 7: Water/Damp Detection – Check for Damp/Flooding in Sheds and Basements</b>	<b>95</b>
<b>A brief note on dampness</b>	<b>96</b>
<b>Damp detection system</b>	<b>96</b>
Arduino circuit	96
Sketch code	97
<b>Database updates</b>	<b>100</b>
<b>Python code</b>	<b>100</b>
Adding a cron job	101
<b>Using the humidity reading</b>	<b>102</b>
Adding an LED alert	102
Blinking LED code	103
Expanding the LED functionality	104
Connecting a dehumidifier	106
<b>Water detection</b>	<b>106</b>
<b>Summary</b>	<b>108</b>
<b>Chapter 8: Wrapping Up</b>	<b>109</b>
<b>A brief review of the second edition of Raspberry Pi Home Automation with Arduino</b>	<b>110</b>
<b>Next steps</b>	<b>111</b>
The prototyping Pi Plate	111
The wiringPi library	112
The Gertboard	113
Introduction to the Gertboard components	114
GPIO PCB expansion board	114
GPIO pins	114
Motor controller	114
The open collector drivers	115
Buffered I/O	115
Atmel ATmega microcontroller	115
Convertors – analog to digital and digital to analog	116
Creating software for the Gertboard	116
<b>Ideas for future projects</b>	<b>116</b>
Expanding the curtain automation tool to include temperature sensing	117
Changing the motor on the curtain automation project to a stepper motor	117
Switching lights on with a photoresistor	117
Holiday lights from LEDs	118

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<b>The future of home automation</b>	<b>118</b>
3D printing	118
RFID chips	118
EEG headsets	119
<b>Summary</b>	<b>119</b>
<b>Appendix: References</b>	<b>121</b>
<b>Raspberry Pi</b>	<b>121</b>
<b>Raspberry Pi to Arduino bridge shield</b>	<b>122</b>
<b>Linux</b>	<b>122</b>
<b>Python</b>	<b>123</b>
<b>C/C++</b>	<b>123</b>
<b>Arduino</b>	<b>123</b>
<b>SQL</b>	<b>124</b>
<b>HTSQL</b>	<b>124</b>
<b>Electronics</b>	<b>124</b>
<b>Packt Publishing titles</b>	<b>125</b>
<b>Home automation technology</b>	<b>125</b>
<b>3D printing</b>	<b>126</b>
<b>Index</b>	<b>127</b>

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# Preface

The world of home automation is an exciting field that has exploded over the past few years with many new technologies in both the commercial and open source worlds. This book provides a gateway for those interested in learning more about this topic and building their own projects.

With the introduction of the Raspberry Pi computer in 2012, a small and powerful tool is now available for the home automation enthusiast, programmer, and electronic hobbyist. It allows them to augment their home with sensors and software.

Combining Raspberry Pi with the power of the open-hardware Arduino platform, this book will take you through several projects in which you will build electronic sensors, and introduce you to software that will record their data for later use.

We hope you will enjoy the second edition of *Raspberry Pi Home Automation with Arduino*.

## What this book covers

*Chapter 1, An Introduction to the Raspberry Pi, Arduino, and Home Automation*, introduces the technologies used in the book and provides a conceptual background to the world of home automation.

*Chapter 2, Getting Started – Setting Up Your Raspberry Pi and Arduino*, is a guide to your Raspberry Pi, Arduino, and the Cooking Hacks Raspberry Pi to Arduino bridge shield.

*Chapter 3, Central Air and Heating Thermostat*, teaches you how to build a thermostat using the Arduino platform to control your central air conditioning and heating.

*Chapter 4, Temperature Storage – Setting Up a Database to Store Your Results*, shows you how to build a database to store your projects' data, and explore it via your web browser.

*Chapter 5, Parcel Delivery Detector*, demonstrates a system using Arduino and Raspberry Pi that will alert you whenever a parcel arrives at your door.

*Chapter 6, Curtain Automation – Open and Close the Curtains Based on the Ambient Light*, teaches you how to integrate motors with your projects to open and close blinds and curtains using the skills learned in previous chapters.

*Chapter 7, Water/Damp Detection – Check for Damp/Flooding in Sheds and Basements*, helps you build systems that can check for humidity and water to indicate dampness and flooding.

*Chapter 8, Wrapping Up*, finishes the topic with some ideas for future projects.

*Appendix, References*, lists a collection of links to the resources used in this book and other interesting information.

## What you need for this book

- Raspberry Pi (version B+)
- A SD card
- Arduino Uno
- A Seeed Ethernet shield
- Cooking Hacks' Raspberry Pi to Arduino bridge shield
- An Arduino motor shield
- A Pololu relay module
- An AM2302 combined thermistor/humidity sensor
- An LED
- A Seeed Grove Water sensor
- A 10K ohm resistor
- A force resistor sensor
- A 9V or 12V DC motor
- A breadboard
- Breadboard wires and power supply
- USB cables
- A Cat-5 Ethernet cable
- An Internet connection with a home modem or router
- A small electric fan