EXP

Expansion Boards for micro:bit

CHAPTER ASSIGNMENT

Name _____ Class _____ No. _____ Date _____

> Answer every question in the space given. Show your working. You may use the chapter page to help you.

Questions from the Guru Jazzy micro:bit chapter page.

Activity · Why a plain micro:bit is not enough

1. Look at the edge connector. How many pins are there in total, how many are big 4 mm ring holes, and which ones are they?

2. The micro:bit can supply about 300 mA at 3.3 V. A small servo wants 5–6 V and a few hundred milliamps. Explain what would happen if you tried to run the servo from the board alone.

3. Name two jobs an expansion board does that the micro:bit cannot do by itself.

Activity · Choosing a board

4 Fill in the table from the three INEX boards in the chapter.

Board	One thing it is best at	A project that suits it
PROJECT:BIT		
AX-microBIT+		
iBIT+		

5 Which board would you choose for each project below? Give a reason each time.

(a) A robot that drives around the classroom and follows a black line.

(b) A desk experiment where students turn a knob and watch the number change.

(c) A model gate with four servos, bolted to a wooden base.

6 iBIT+ takes 4.8 V to 16 V in, and makes +3.3 V and +6 V on the board. Say what each of those three voltages is for.

Activity · Reading the specifications

7 The ADS7828 on iBIT+ is a 12-bit converter with 8 channels. Work out its range of readings, and say how much finer it is than the micro:bit's own ADC. Show your working.

8. I2C uses two wires. Write their names and say what each one carries.

9. All three boards have reverse-polarity protection. Explain what mistake it protects against, and what would happen without it.

Check yourself

1. Which pin does the potentiometer on AX-microBIT+ reach, and which block reads it?

2. PROJECT:BIT has four servo channels. Write the four pins they use.

3. Why do the motors on iBIT+ take their power straight from the battery rather than from the micro:bit?

4. You have a micro:bit, an expansion board and a servo, and nothing moves. Write three things you would check, in order.

5. Design a project of your own. Say which board you would use, what it would do, and which ports you would need.

Chapter quiz

1. How many of the 25 edge-connector contacts are the big 4 mm ring holes?
   A) 5 B) 3 C) 10 D) 20

2. How much current can the micro:bit supply on its own 3.3 V rail?
   A) About 300 mA B) About 1 A C) About 3 A D) About 30 mA

3. Which board is built for a mobile robot with two DC motors?
   A) iBIT+ B) PROJECT:BIT C) AX-microBIT+ D) All three equally

4. How many servo channels does PROJECT:BIT provide?
   A) 4 B) 1 C) 2 D) 8

5. Which board has a potentiometer already wired to pin P2?
   A) AX-microBIT+ B) iBIT+ C) PROJECT:BIT D) None of them

6. The ADS7828 on iBIT+ converts to 12 bits. What is its top reading?
   A) 4095 B) 1023 C) 255 D) 65535

7. Which connector lets a board take an OLED screen or a digital sensor?
   A) The I2C bus (SDA and SCL) B) The servo header C) The motor terminal block
   D) The USB socket

8. Why do these boards include reverse-polarity protection?

A	B	C	D
To survive a battery connected the wrong way round	To make the motors faster	To raise the voltage	To save the LEDs