**Programming Exercises**

These exercises are designed to improve your skills as a programmer.

**Exercise 1 - Difficulty Level: Beginner**

Set up a string variable to hold the letters of the alphabet, A to G:

Use string methods to extract the key of C Major (CDEFGAB) from the variable called **notes**. When you have finished this exercise, you should have the following displayed:

The key of C is: CDEFGAB

**Exercise 2 - Difficulty Level: Beginner**

Set up an array to hold the following string values:

Beyonce (f)  
David Bowie (m)  
Elvis Costello (m)  
Madonna (f)  
Elton John (m)  
Charles Aznavour (m)

Write a program to loop round and count how many are male vocalists and how many are female.

**Exercise 3 - Difficulty Level: Intermediate**

Set up an array of the following musical instruments:

cello  
guitar  
violin  
double bass

Loop round and remove the vowels.

**Exercise 4 - Difficulty Level: Beginner**

Write a program to count how many numbers between 1 and 1000 are divisible by 3 with no remainder.

**Exercise 5 - Difficulty Level: Beginner**

For every number on a dartboard (1 to 20), work out the possible single, double and treble scores. (For example, the number 20 has the possible score 20, 40 and 60.)

**Exercise 6 - Difficulty Level: Intermediate to Advanced**

Write code to create a checkerboard pattern with the words "black" and "white" standing in for colours. Display the new words in a textbox, listbox or console. When you have finshed this exercise, it should look something like this:



This is a tricky exercise, so here's some reference sections to help you out:

**Exercise 7 - Difficulty Level: Intermediate**

Write a program to work out if a series of 5 digits are consecutive numbers. To make this easier, assumes the digits are a string:

string numbers = "10-9-8-7-6";

Make sure your code works for the following sequence, as well:

string numbers = "1-2-3-4-5"

**Exercise 8 - Difficulty Level: Intermediate**

Following on from the exercise above, work out if a series of 5 integers contain the same number. So the sequence 10-9-8-7-7 would yield the answer "Pair of numbers found".

**Exercise 9 - Difficulty Level: Easy to Intermediate**

Print the word diagonally, diagonally from left to right, top to bottom. When you display your answer it should look something like this:

A picture containing text, clock, clipart

Description automatically generated

[Answer to Exercise 9](https://www.homeandlearn.co.uk/exercises/exercise9_answer.html)

**Exercise 10 - Difficulty Level: Intermediate to Advanced**

Set up a string variable to hold the following results:

"Manchester United 1 Chelsea 0, Arsenal 1 Manchester United 1, Manchester United 3 Fulham 1, Liverpool 2 Manchester United 1, Swansea 2 Manchester United 4";

Write a programme to work out how many wins Manchester United had, how many games they drew, and how many Manchester United lost.

Extend the programme to work out how many goals Manchester United scored and how many they conceded.

Suppose a win gains you 3 points, a draw 1 point, and a loss no points. Have your programme work out how many points in total Manchester United have acquired.

When you have finished this exercise, the output in your textbox, listbox or console should be as follows:

Text

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