

# Worksheet 1 Data types, binary and hex

## Data types



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# Worksheet 1 Primitive data types, binary and hexadecimal

## Task 1: Converting binary and decimal values

A currency icon not represented by keys on the regular QWERTY keyboard can be displayed on a computer monitor using an 8x8 grid. Working right to left, columns in the grid are given binary place values of 1, 2, 4, 8, 16, 32, 64 and 128.

The values from each row are stored in a table, using the place values to calculate the total. Row one in the figure below gives the value of 32.

- a) Complete the values for rows 2-8 to store the ₺ character for Turkish Lira.

The diagram shows an 8x8 grid where columns are labeled with binary place values: 128, 64, 32, 16, 8, 4, 2, 1. A blue arrow points from the grid to a table on the right. The first row of the grid has the 32 column shaded. The first row of the table is filled with the value 32.

Row	Value
1	32
2	
3	
4	
5	
6	
7	
8	

- b) Draw the Euro character € formed from the data values in the table below:

The diagram shows an 8x8 grid where columns are labeled with binary place values: 128, 64, 32, 16, 8, 4, 2, 1. A blue arrow points from the grid to a table on the right. The first row of the grid has the 32 column shaded. The table lists values for rows 1 through 8.

Row	Value
1	28
2	50
3	248
4	96
5	252
6	32
7	51
8	30

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### Task 2: Converting hexadecimal values

- The following colour code **#2A17A5** is represented in hexadecimal. Convert the Red, Green and Blue components into their decimal equivalents.

Red: 2A

Green: 17

Blue: A5

a) Red:

b) Green:

c) Blue:

- Convert the following three decimal RGB colour values into their full hexadecimal equivalent in the table below:

a) Red  $58_{10}$     b) Green  $126_{10}$     c) Blue  $202_{10}$

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- Convert the following binary ASCII values for the word '**Jam**' into their hexadecimal equivalents:

a) J

b) a

c) m

Binary values:

$01001010$

$01100001$

$01101101$

Hexadecimal values:

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- Convert the following three hexadecimal values into 8-bit binary equivalents:

a)  $16_{16}$

b)  $D7_{16}$

c)  $FF_{16}$