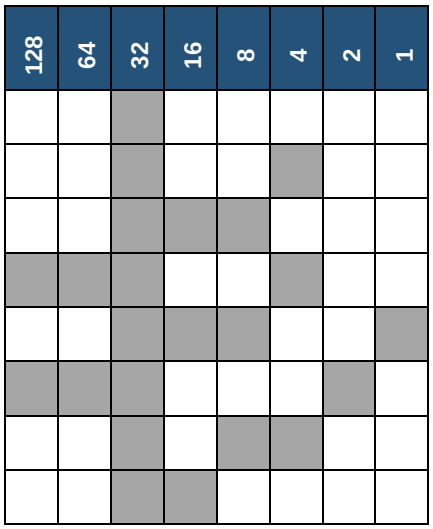
Worksheet 1 Primitive data types, binary and hexadecimal

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.

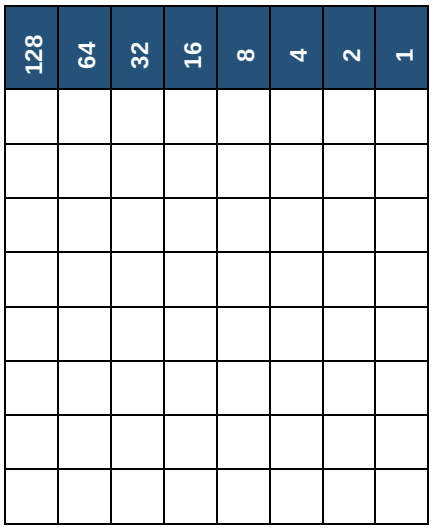
a) Complete the values for rows 2-8 to store the ₺ character for Turkish Lira**.**



128	64	32	16	8	4	2	1
		■					
		■			■		
		■	■	■			
■	■	■			■		
		■	■	■			■
■	■	■				■	
		■		■	■		
		■	■				

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:



128	64	32	16	8	4	2	1

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

Task 2: Converting hexadecimal values

1. 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:

2. 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}
#			

3. 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:			

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

   a) 16_{16}

   b) $D7_{16}$

   c) FF_{16}