**Activity 1**

|  |  |
| --- | --- |
| The wheels on the bus go round and round, round and round, round and round.  The wheels on the bus go round and round all day long. | |
| How many characters, including spaces and punctuation marks, are there in this song? |  |
| Assuming one byte is used to represent each character, what is its file size? |  |

|  |  |  |
| --- | --- | --- |
| Complete this table. | | |
| **Word** | **Number of times used** | **Number of bytes in word** |
| The | 2 | 3 |
| wheels | 2 | 6 |
| on | 2 | 2 |
| the | 2 | 3 |
| bus |  |  |
| go |  |  |
| round |  |  |
| and |  |  |
| all |  |  |
| day |  |  |
| long |  |  |

**Activity 2**

Complete this lookup table of all the words used more than once in the song.

|  |  |
| --- | --- |
| **Lookup table** | |
| 0 | The |
| 1 | wheels |
| 2 | on |
| 3 | the |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |

Use the lookup table you have completed to encode the song, replacing repeated words with the number representing their position in the table.

|  |
| --- |
|  |

**Activity 3**

A lookup table has been used to encode this text:

**Encoded text**

0 1 2 3 generally more effective than 4 1 2 in reducing 5 size 6 7. However, whereas 4 2 allows 5 8 1 9 10 perfectly reconstructed from 5 compressed 1, 11 2 causes some 6 5 8 1 9 10 permanently lost.

0 1 2 3 most often 12 for media 7, i.e. music, pictures 13 videos. This type 6 1 3 intended 9 10 12 14 humans whose brains are capable 6 ‘filling in 5 gaps’ created 14 11 2.

MP3 uses 11 1 2 9 compress audio 7 for use on portable media players where space 3 limited.

PNG 13 GIF use 4 1 2 9 reduce 5 size 6 image 7.

|  |  |
| --- | --- |
| 0 | Lossy |
| 1 | data |
| 2 | compression |
| 3 | is |
| 4 | lossless |
| 5 | the |
| 6 | of |
| 7 | files |
| 8 | original |
| 9 | to |
| 10 | be |
| 11 | lossy |
| 12 | used |
| 13 | and |
| 14 | by |

Decode the text.

|  |
| --- |
|  |

**‘Short and Sweet’**

Complete the worksheet activity ‘[**Short and Sweet**](https://drive.google.com/file/d/0B2cp7Uh8e6rpRmg4bjlvTUFGVE0/view?usp=sharing)’ from Computer Science Unplugged.

**‘Extra for *Real* Experts’**

Complete the worksheet activity ‘[**Extra for *Real* Experts**](https://drive.google.com/file/d/0B2cp7Uh8e6rpRmg4bjlvTUFGVE0/view?usp=sharing)’ from Computer Science Unplugged.

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