# 3.3.2 Hashing

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| **This Worksheet Tests:** |
| Explain the technique of hashing and its application. |

1. A file has 1000 records to store. Using the **Division/Remainder** hashing algorithm, state the address of the following record numbers:

|  |  |
| --- | --- |
| **Record Numbers** | **Storage address** |
| 73861 |  |
| 45603 |  |
| 267 |  |
| 4784 |  |
| 999 |  |
| 45 |  |

[6]

2. A firm uses a very simplistic method to store staff names. They apply a hashing algorithm **(/10)** to their telephone numbers. Show how these names would be stored.

|  |  |  |
| --- | --- | --- |
| **Name** | **Telephone number** | **Storage address** |
| Mary Smith | 02890793736 |  |
| Jack Jones | 02890796041 |  |
| Fred Smith | 02842738557 |  |
| William Morgan | 02890623577 |  |
| Bill Johnston | 02891634756 |  |

[5]

3. Another firm gives its employees 4 figure employee codes. It applies **subtraction** hashing to these employee codes. Show where the following would be stored if the subtraction is 1000.

|  |  |
| --- | --- |
| **Employee Code** | **Storage address** |
| 4375 |  |
| 8247 |  |
| 9311 |  |
| 4632 |  |

[4]

4. Draw a diagram to show how the values **56, 98, 101, 133, 151, 162, 165, 188, 298, 400, 409, 475, 582, 631, 744** are inserted into a hash table with 20 positions. Use the **Division Method** of hashing and the linear probing method of resolving collisions.

|  |  |
| --- | --- |
| **Values** | **Storage address** |
| 56 |  |
| 98 |  |
| 101 |  |
| 133 |  |
| 151 |  |
| 162 |  |
| 165 |  |
| 188 |  |
| 298 |  |
| 400 |  |
| 409 |  |
| 475 |  |
| 582 |  |
| 631 |  |
| 744 |  |

[15]

Total Marks = 30