**Binäre Suche: Aufgaben**

**Aufgabe 1**

Suchen Sie in folgenden Array nach der Zahl **220**. Wenden Sie dabei den Algorithmus *Binäre Suche* an! Zeigen Sie dabei auch in jeder Zeile, welchen Wert die Variablen indexAnfang, indexEnde und indexMitte annehmen. Sie müssen nichts programmieren, sondern zeigen, wie gesucht wird!

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** | **array[5]** | **array[6]** | **array[7]** | **array[8]** |
| 5 | 9 | 33 | 110 | 170 | 220 | 330 | 550 |
|  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** | **array[5]** | **array[6]** | **array[7]** | **array[8]** |
| 5 | 9 | 33 | 110 | 170 | 220 | 330 | 550 |
|  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** | **array[5]** | **array[6]** | **array[7]** | **array[8]** |
| 5 | 9 | 33 | 110 | 170 | 220 | 330 | 550 |
|  |  |  |  |  |  |  |  |

**Aufgabe 2**

Suchen Sie im folgenden Array nach der Zahl **7**, indem Sie zeigen, wie der Algorithmus *Binäre Suche* funktioniert. Zeigen Sie in jeder Zeile, welchen Wert die Variablen indexAnfang, indexEnde und indexMitte annehmen. Sie müssen nichts programmieren, sondern zeigen, wie gesucht wird!

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** | **array[5]** | **array[6]** | **array[7]** | **array[8]** |
| 5 | 9 | 33 | 110 | 170 | 220 | 330 | 550 |
|  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** | **array[5]** | **array[6]** | **array[7]** | **array[8]** |
| 5 | 9 | 33 | 110 | 170 | 220 | 330 | 550 |
|  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** | **array[5]** | **array[6]** | **array[7]** | **array[8]** |
| 5 | 9 | 33 | 110 | 170 | 220 | 330 | 550 |
|  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** | **array[5]** | **array[6]** | **array[7]** | **array[8]** |
| 5 | 9 | 33 | 110 | 170 | 220 | 330 | 550 |
|  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** | **array[5]** | **array[6]** | **array[7]** | **array[8]** |
| 5 | 9 | 33 | 110 | 170 | 220 | 330 | 550 |
|  |  |  |  |  |  |  |  |

**Aufgabe 3**

Im folgenden Array wird nach der Zahl **2222** gesucht. Vervollständigen Sie die letzten Schleifendurchläufe.

|  |  |  |  |
| --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** |
| 2222 | 1111 | 10000 | 1000000000 |
| indexAnfang |  | indexMitte  10000 > 2222  (🡪 links suchen) | indexEnde |

|  |  |  |  |
| --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** |
| 2222 | 1111 | 10000 | 1000000000 |
| indexAnfang | indexEnde  indexMitte  1111 < 2222  (🡪 rechts suchen!) |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** |
| 2222 | 1111 | 10000 | 1000000000 |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** |
| 2222 | 1111 | 10000 | 1000000000 |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** |
| 2222 | 1111 | 10000 | 1000000000 |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **array[1]** | **array[2]** | **array[3]** | **array[4]** |
| 2222 | 1111 | 10000 | 1000000000 |
|  |  |  |  |