COURSE NAME: Algorithm Analysis

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HOMEWORK SUBJECT: Backtracking

Algorithm:

1. A predefined color set has been printed.
2. Information was received from the user whether he wanted matrix size, color matrix and processing steps.
3. While importing the matrix, the index of the elements in the color array was recorded in the matrix. If the entered element is not in the color array, the program is terminated.
4. Backtracking function is called. This function is calculated starting from the first row.
5. Each row that was processed was compared with the lines above it and it was checked whether there is an element in the same column that is the same as the elements in the row.
6. If all elements are different, the function is called for the next row.
7. In case we passed the bottom row, the function returned true.
8. If one of the elements in the row is the same, the process is repeated by rotating as many rows as the number of elements in the row.
9. Every time the rotation is done, if the user has requested the operation steps, an output is given.
10. If as many rows are made in the top row, the result is returned false.
11. An output is given to the user, depending on whether the result is true or false.

Screenshots:

```
Welcome to the color matrix placing
Available colors : {green, red, blue, gray, pink, black, white, cyan}
Please enter matrix size: 4
Please enter color matrix;
Please enter 1. row: red gray blue pink
Please enter 2. row: red gray blue pink
Please enter 3. row: red gray blue pink
Please enter 4. row: red gray blue pink
Do you want to print rotations(y/n)? y
Rotated Row - 2
| red   gray    blue    pink    |
| pink  red     gray    blue    |
| red   gray    blue    pink    |
| red   gray    blue    pink    |

Rotated Row - 3
| red   gray    blue    pink    |
| pink  red     gray    blue    |
| pink  red     gray    blue    |
| red   gray    blue    pink    |

Rotated Row - 3
| red   gray    blue    pink    |
| pink  red     gray    blue    |
| blue  pink    red     gray    |
| red   gray    blue    pink    |
```

```
Rotated Row - 4
| red   gray    blue    pink    |
| pink  red     gray    blue    |
| blue  pink    red     gray    |
| pink  red     gray    blue    |

Rotated Row - 4
| red   gray    blue    pink    |
| pink  red     gray    blue    |
| blue  pink    red     gray    |
| blue  pink    red     gray    |

Rotated Row - 4
| red   gray    blue    pink    |
| pink  red     gray    blue    |
| blue  pink    red     gray    |
| gray  blue    pink    red     |

Found a result successfully.
| red   gray    blue    pink    |
| pink  red     gray    blue    |
| blue  pink    red     gray    |
| gray  blue    pink    red     |
```

```
Welcome to the color matrix placing
Available colors : {green, red, blue, gray, pink, black, white, cyan}
Please enter matrix size: 5
Please enter color matrix;
Please enter 1. row: pink black green red blue
Please enter 2. row: blue red green pink black
Please enter 3. row: red black blue pink green
Please enter 4. row: black pink blue green red
Please enter 5. row: red pink black blue green
Do you want to print rotations(y/n)? n
Sorry!, Couldn't find any result.
```

```
Welcome to the color matrix placing
Available colors : {green, red, blue, gray, pink, black, white, cyan}
Please enter matrix size: 6
Please enter color matrix;
Please enter 1. row: gray black red blue white green
Please enter 2. row: gray black red blue white green
Please enter 3. row: gray black red blue white green
Please enter 4. row: gray black red blue white green
Please enter 5. row: gray black red blue white green
Please enter 6. row: gray black red blue white green
Do you want to print rotations(y/n)? n
Found a result successfully.
| gray  black   red     blue    white   green   |
| green gray    black   red     blue    white   |
| white green   gray    black   red     blue    |
| blue  white   green   gray    black   red     |
| red   blue    white   green   gray    black   |
| black red     blue    white   green   gray    |
```