# Информация и информационные процессы

## Практическая работа 4

## Графы

1. Постройте матрицы смежности и весовые матрицы для каждого графа:

|  |  |  |  |
| --- | --- | --- | --- |
| а) | б) | в) | г) |
| 2  1  4  1 | 3  4  1  1  2 | 2  1  4  3 | 2  4  1  3  1 |

|  |  |  |  |
| --- | --- | --- | --- |
| Матрицы смежности: |  |  |  |
| а) | б) | в) | г) |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | | **A** |  |  |  |  | | **B** |  |  |  |  | | **C** |  |  |  |  | | **D** |  |  |  |  | | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | | **A** |  |  |  |  | | **B** |  |  |  |  | | **C** |  |  |  |  | | **D** |  |  |  |  | | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | | **A** |  |  |  |  | | **B** |  |  |  |  | | **C** |  |  |  |  | | **D** |  |  |  |  | | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | | **A** |  |  |  |  | | **B** |  |  |  |  | | **C** |  |  |  |  | | **D** |  |  |  |  | |
| Весовые матрицы |  |  |  |
| а) | б) | в) | г) |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | | **A** |  |  |  |  | | **B** |  |  |  |  | | **C** |  |  |  |  | | **D** |  |  |  |  | | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | | **A** |  |  |  |  | | **B** |  |  |  |  | | **C** |  |  |  |  | | **D** |  |  |  |  | | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | | **A** |  |  |  |  | | **B** |  |  |  |  | | **C** |  |  |  |  | | **D** |  |  |  |  | | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | | **A** |  |  |  |  | | **B** |  |  |  |  | | **C** |  |  |  |  | | **D** |  |  |  |  | |

1. Постройте графы, соответствующие каждой из матриц смежности:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| а) | | б) | в) | г) | |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  | 0 | 1 | 1 | 0 | | **B** | 0 |  | 1 | 0 | 1 | | **C** | 1 | 1 |  | 0 | 1 | | **D** | 1 | 0 | 0 |  | 0 | | **Е** | 0 | 1 | 1 | 0 |  | | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  | 0 | 1 | 1 | 1 | | **B** | 0 |  | 1 | 0 | 0 | | **C** | 1 | 1 |  | 0 | 1 | | **D** | 1 | 0 | 0 |  | 0 | | **Е** | 1 | 0 | 1 | 0 |  | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  | 0 | 1 | 1 | 1 | | **B** | 0 |  | 1 | 0 | 1 | | **C** | 1 | 1 |  | 0 | 1 | | **D** | 1 | 0 | 0 |  | 0 | | **Е** | 1 | 1 | 1 | 0 |  | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  | 0 | 0 | 1 | 0 | | **B** | 0 |  | 1 | 0 | 1 | | **C** | 0 | 1 |  | 1 | 1 | | **D** | 1 | 0 | 1 |  | 0 | | **Е** | 0 | 1 | 1 | 0 |  | | |
| а) | | б) | |
| в) | | г) | |

1. Постройте графы, соответствующие каждой из весовых матриц:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| а) | | б) | в) | г) | |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  | 4 | 3 |  | 7 | | **B** | 4 |  |  | 2 |  | | **C** | 3 |  |  | 6 |  | | **D** |  | 2 | 6 |  | 1 | | **Е** | 7 |  |  | 1 |  | | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  | 2 | 5 |  | 6 | | **B** | 2 |  |  | 3 |  | | **C** | 5 |  |  |  |  | | **D** |  | 3 |  |  | 1 | | **Е** | 6 |  |  | 1 |  | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  |  | 2 | 2 | 6 | | **B** |  |  |  | 2 |  | | **C** | 2 |  |  | 2 |  | | **D** | 2 | 2 | 2 |  |  | | **Е** | 6 |  |  |  |  | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  | 5 | 2 |  | 6 | | **B** | 5 |  |  | 5 |  | | **C** | 2 |  |  | 2 |  | | **D** |  | 5 | 2 |  | 3 | | **Е** | 6 |  |  | 3 |  | | |
| а)  4  3  7  2  6  1 | | б)  2  5  6  3  1 | |
| в)  2  2  2  6  2 | | г)  5  2  6  5  2  3 | |

1. Постройте орграф, соответствующий каждой из весовых матриц.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| а) | | б) | в) | г) | |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  |  | 3 | 1 |  | | **B** | 2 |  | 4 |  | 2 | | **C** | 3 |  |  |  |  | | **D** | 1 |  |  |  |  | | **Е** |  |  | 2 |  |  | | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  |  | 5 | 1 | 1 | | **B** |  |  | 6 | 4 |  | | **C** | 3 | 4 |  |  | 2 | | **D** |  | 2 |  |  |  | | **Е** |  |  | 3 |  |  | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  |  | 3 | 1 | 4 | | **B** |  |  | 4 |  | 2 | | **C** |  | 4 |  |  | 2 | | **D** |  |  |  |  |  | | **Е** | 4 |  | 2 |  |  | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A** | **B** | **C** | **D** | **Е** | | **A** |  |  |  | 1 |  | | **B** |  |  | 4 |  | 1 | | **C** | 3 | 4 |  | 4 | 2 | | **D** | 1 | 2 | 4 |  |  | | **Е** | 1 | 1 | 2 |  |  | | |
| а)  3  1  2  4  2 | | б)  5  1  6  3  4  1  4  2  2  3 | |
| в)  3  1  4  4  2  2 | | г)  1  4  1  3  2  1  4 | |