



United International University (UIU)
Dept. of Computer Science & Engineering (CSE)
Mid-Term Exam Trimester: Fall 2023
Course Code: CSE 1112, Course Title: Structured
Programming Language Lab
Total Marks: 30 Duration: 1 hour 15 minutes
Set: B

Any examinee found adopting unfair means would be expelled from the trimester/program as per UIU disciplinary rules.

| 1. | <p>Write a C program that will take (n x n) integer inputs into a square matrix of dimension n (where n must be an odd number and n >= 5). Then calculate the sum of the integers based on the following position pattern (consider only the boxed position during the sum). Please see the input-output.</p> | [10] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|------|--------------|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|---|---|---|---|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|
| <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td><p>5</p><table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>2</td><td>3</td><td>4</td><td>1</td><td>6</td></tr><tr><td>3</td><td>4</td><td>9</td><td>6</td><td>7</td></tr><tr><td>4</td><td>2</td><td>6</td><td>7</td><td>8</td></tr><tr><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table></td><td><p>47</p></td></tr><tr><td><p>7</p><table><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr></table></td><td><p>19</p></td></tr></table> | | | Sample input | Sample output | <p>5</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>2</td><td>3</td><td>4</td><td>1</td><td>6</td></tr><tr><td>3</td><td>4</td><td>9</td><td>6</td><td>7</td></tr><tr><td>4</td><td>2</td><td>6</td><td>7</td><td>8</td></tr><tr><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 2 | 3 | 4 | 1 | 6 | 3 | 4 | 9 | 6 | 7 | 4 | 2 | 6 | 7 | 8 | 5 | 4 | 3 | 2 | 1 | <p>47</p> | <p>7</p> <table><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr></table> | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | <p>19</p> |
| Sample input | Sample output | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>5</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>2</td><td>3</td><td>4</td><td>1</td><td>6</td></tr><tr><td>3</td><td>4</td><td>9</td><td>6</td><td>7</td></tr><tr><td>4</td><td>2</td><td>6</td><td>7</td><td>8</td></tr><tr><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table> | 1 | 2 | 3 | 4 | 5 | 2 | 3 | 4 | 1 | 6 | 3 | 4 | 9 | 6 | 7 | 4 | 2 | 6 | 7 | 8 | 5 | 4 | 3 | 2 | 1 | <p>47</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 3 | 4 | 1 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | 9 | 6 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 2 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>7</p> <table><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr></table> | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | <p>19</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| 2. | Write a C program that will take n integer numbers into an array, and then find the second smallest number of the array. | [10] | | | | | | |
|---|--|------|--------------|---------------|----------------------|------|--------------|-----|
| <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>8 8 2 1 3 9 6 4 5</td><td>2</td></tr><tr><td>4 5 3 8 7</td><td>5</td></tr></table> | | | Sample input | Sample output | 8 8 2 1 3 9 6 4 5 | 2 | 4 5 3 8 7 | 5 |
| Sample input | Sample output | | | | | | | |
| 8 8 2 1 3 9 6 4 5 | 2 | | | | | | | |
| 4 5 3 8 7 | 5 | | | | | | | |
| 3. | Write a C program that will reverse the digits of an input integer. | [10] | | | | | | |
| <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>1234</td><td>4321</td></tr><tr><td>912</td><td>219</td></tr></table> | | | Sample input | Sample output | 1234 | 4321 | 912 | 219 |
| Sample input | Sample output | | | | | | | |
| 1234 | 4321 | | | | | | | |
| 912 | 219 | | | | | | | |

Mark Distribution for each problem:

10

1. Properly taking inputs and saving them. (2)
2. Solving logic and proper implementation. (6)
3. Properly showing outputs. (2)