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| --- | --- |
| Name |  |
| Date |  |

**Written Test**

**Position:** **Part-time Intern, Software Development, HKCERT**

**Digital Transformation Division (Ref: DTD541/22, 8373)**

**Instructions**

You are required to answer the below questions. Time allowed: 30 minutes

**Questions**

1. Find the largest sum in a sub-array. For example, in the array below, the largest sum sub-array starts at index 3 and ends at 6, and with the largest sum being 11.

Target:

Runtime complexity: Linear, O(n)

Memory complexity: Constant, O(1)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| -3 | 2 | -4 | 1 | 2 | 3 | 5 | -5 | 1 | 0 |

1. Given a database with the following table structure:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Student |  | Course |  | Enrollment |
| StudentID |  | CourseID |  | EnrollmentID |
| StudentFullName |  | CourseName |  | CourseID |
| HomeAddress |  | StartDate |  | StudentID |
|  |  | EndDate |  |  |
|  |  |  |  |  |

Write a SQL statement to produce the following result:

|  |  |  |
| --- | --- | --- |
| CourseID | CourseName | TotalNumberOfStudent |
| C01 | C# Programming | 15 |
| C02 | Web Application Development | 21 |
| C03 | Introduction to HTML5 | 19 |