Government of **Western Australia**
**School Curriculum and Standards Authority**

**ATAR course sample examination two**

# COMPUTER SCIENCE

## SOURCE BOOKLET

**Refer to the information that follows to answer Question 21 in Section Two of the Question/Answer booklet.**

Rottnest Boat Charters records all the certifications of the divers that they take to dive sites in a spreadsheet. The table below is an extract from the spreadsheet used to store the certifications of divers that use Rottnest Boat Charters.

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Diver ID | Diver First Name | Diver Last Name | DoB | Certification Number | Issuing Agency | Diver Certification Name | Date Attained | Instructor Number | Instructor First Name | Instructor Last Name |
| 2 | 1054 | Christopher | Dickson | 28-Feb-78 | 8786360 | PADI | Nitrox | 03-Jan-12 | 374968 | Adrian | Snyder |
| 3 | 4326 | Karina | Maldonado | 08-Jan-78 | 78197527 | SSI | Instructor | 05-May-19 | 969501 | Elizabeth | Phelps |
| 4 | 4326 | Karina | Maldonado | 08-Jan-78 | 58464853 | PADI | Dive Master | 27-Aug-08 | 374968 | Adrian | Snyder |
| 5 | 1653 | Nicole | Hess | 19-Apr-85 | 51660025 | PADI | Nitrox | 14-Apr-17 | 927641 | Meredith | Meyer |
| 6 | 2435 | Gil | Atkins | 27-Feb-79 | 89424674 | SSI | Diver Stress and Rescue | 20-Feb-11 | 969501 | Elizabeth | Phelps |
| 7 | 1054 | Christopher | Dickson | 28-Feb-78 | 76347201 | PADI | Nitrox | 03-Jan-12 | 927641 | Meredith | Meyer |
| 8 | 3854 | Gregory | Barr | 10-Sep-78 | 31736510 | SSI | Master Diver | 27-Aug-08 | 732862 | Matthew | Coleman |
| 9 | 1528 | Olympia | Maldonado | 14-Jul-80 | 49967974 | SSI | Advanced Adventurer | 15-Sep-20 | 732862 | Matthew | Coleman |
| 10 | 1539 | Mikayla | Dickson | 27-Sep-86 | 68703737 | SSI | Diver Stress and Rescue | 21-May-07 | 732862 | Matthew | Coleman |
| 11 | 3854 | Gregory | Barr | 10-Sep-78 | 31736537 | PADI | Open Water | 27-Aug-08 | 927641 | Meredith | Meyer |
| 12 | 3854 | Gregory | Barr | 10-Sep-78 | 83317365 | PADI | Rescue Diver | 16-Apr-19 | 374968 | Adrian | Snyder |

**See next page**

**Refer to the information that follows to answer Question 22 in Section Two of the Question/Answer booklet.**

William is a keen diver and has developed a database to record the details of his dives.

The following tables provide sample data from William's database.

**Table: Boat**

| boatID | name | capacity | operatorID |
|---|---|---|---|
| 9 | The Dolphin | 12 | 3 |
| 12 | Tiburon | 8 | 3 |
| 17 | Eagle Ray | 36 | 9 |
| 22 | Ocean Explorer | 24 | 8 |

**Table: Operator**

| operatorID | name | phone | city | state | country |
|---|---|---|---|---|---|
| 3 | Rottnest Dive Centre | (08) 9345 2365 | Perth | WA | Australia |
| 8 | Sunny Dive Charters | +1 804 454 635 | Playa Ocotal | Guanacaste | Costa Rica |
| 9 | Whale Shark Tours | +61 436 756 354 | Exmouth | WA | Australia |
| 14 | Turtle Adventures | +1 435 356 323 | Palm Beach | FL | USA |

**Table: Dive**

| diveID | diveNumber | date | startTime | endTime | avgDepth | maxDepth | siteID FK | boatID FK |
|---|---|---|---|---|---|---|---|---|
| 16 | 104 | 05-Aug-21 | 9:03:00 AM | 9:57:00 AM | 11.78 | 17.74 | 346 | 22 |
| 20 | 107 | 09-Aug-21 | 2:32:00 PM | 3:13:00 PM | 10.17 | 13.22 | 444 | 9 |
| 27 | 109 | 12-Nov-21 | 10:04:00 AM | 10:49:00 AM | 12.61 | 17.18 | 368 | 17 |
| 77 | 156 | 05-Jan-22 | 8:58:00 AM | 9:43:00 AM | 16.83 | 22.31 | 383 | 9 |
| 81 | 160 | 19-Mar-22 | 7:04:00 PM | 8:01:00 PM | 10.38 | 17.62 | 368 | 17 |
| 109 | 188 | 24-Apr-22 | 6:34:00 PM | 7:13:00 PM | 14.21 | 19.59 | 444 | 12 |

**Table: Site**

| siteID | name | maxDepth | waterType | locationID FK |
|---|---|---|---|---|
| 346 | Big Surprise | 23.5 | Salt | 79 |
| 444 | The Wall | 14.0 | Salt | 87 |
| 368 | Rainbow | 18.0 | Salt | 94 |
| 383 | Blue Fish Point | 36.5 | Fresh | 87 |

**Table: Location**

| locationID | name | state | country |
|---|---|---|---|
| 61 | Sydney | NSW | Australia |
| 79 | Playa Ocotal | Guanacaste | Costa Rica |
| 35 | Palm Beach | FL | USA |
| 87 | Perth | WA | Australia |
| 94 | Exmouth | WA | Australia |

**See next page**

**Refer to the information that follows to answer Question 23 in Section Two of the Question/Answer booklet.**

As part of their dive trips, Rottnest Dive Centre has rental equipment that customers can hire if they need to.

Customers are able to join the Rottnest Dive Club and, depending on their level of membership, get a discount on rental equipment. The discount is calculated based on the following table:

| Membership level | Discount rate |
|:---:|:---:|
| Gold | 20% |
| Silver | 12% |
| Bronze | 5% |

Rottnest Drive Centre would like a program to help them calculate the cost of rental equipment for each customer. The program should:

- allow the user to enter the items being hired by the customer. Each item will be placed in the array *itemsToHire* as it is entered by the user. NOTE: Customers do not necessarily need to enter an item to hire as they may already own all the required equipment
- calculate the *totalCost* of the items to be hired based on the costs that are stored in a dictionary *costOfGear*
- calculate the discount rate based on the table above. If the customer is not a member then the discount rate will be 0
- calculate the amount of the discount
- calculate the *finalCost* for the hire items
- output the final cost.

**See next page**

**Refer to the information that follows to answer Question 24 in Section Two of the Question/Answer booklet.**

Rottnest Dive Centre is looking to expand its operations and include a training facility along with their retail shop. As part of this expansion, they need to upgrade their computer network to allow both staff and customers access to the Internet.

For security reasons, the network will be split into three subnets – Retail operations, General staff and Customers.

- The Retail operations subnet consists of two point-of-sale terminals (POS) that allow customers to pay for their purchases with credit card or via EFTPOS, two terminals to record transactions and check stock levels and three retail desktop computers.
- Two desktop computers located in the General staff office that are used by the dive centre to manage all their operations, including managing the Customer database and all the financial records of the dive centre. Included in this office are three wirelessly connected laptops.
- The General staff subnet allows staff to access teaching materials on the network to allow them to deliver training courses and record trainee details in the Training database.
- The Customers subnet allows customers and staff to access the Internet for personal use via a wireless connection, allowing them to connect their own personal devices to the network. There will also be three desktop computers that customers can access.

There will be a shared printer and a central file server that can be accessed by all three subnets. All internet traffic will come into the dive centre via a one gigabit internet connection and the entire network is protected with a firewall. Each subnet will also have its own dedicated firewall to help keep it secure.

**End of booklet**

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