

Faculty of Applied Sciences and Computing

Academic Year 2016/17

AACS 1074 Programming Concepts and Design I

Coursework 1 (Individual assignment)

DCO1

Year 1 – Semester 1

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Course/Year : Diploma in Science (Computer Science and Computer Mathematics) / DCO1

Tutorial Group : D4

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Declaration of Originality

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**Brief Description / Purpose**

Nowadays, a lot of people go TARCinemax to enjoy the latest movie. To increase efficiency of selling ticket, management of TARCinemax decided to hire a programmer to develop a Ticketing Program to replace selling ticket in traditional way. The Ticketing Program have to assign different ticket price for three different class and in each class, ticket price for adult, student and child is different from one and other. The Ticketing Program also have to print out ticket, display sales report, etc.

**Method of Solution**

print\_logo() welcome()

Start

Start

Answer = Y

Read answer

Print ‘

Welcome to TARCinemx !

Do you want to purchase some tickets?

If Yes, please press 'Y' to continue.

If No, please press 'N' to exit >>> e.’

Print ‘TARCinexmax’ logo

End

**Define Constant**

|  |  |  |  |
| --- | --- | --- | --- |
| Constant name | Description | Value stored | Data type |
| class0\_total\_seat | To store total seat in class 0 | 15 | int |
| class1\_total\_seat | To store total seat in class 1 | 15 | int |
| class2\_total\_seat | To store total seat in class 2 | 30 | int |
| all\_class\_total\_seat | To store total seat in class 0, 1 and 2 | 60 | int |
| class0\_adult | To store price for class 0 adult seat | 30.00 | double |
| class0\_student | To store price for class 0 student seat | 20.00 | double |
| class0\_child | To store price for class 0 child seat | 15.00 | double |
| class1\_adult | To store price for class 1 adult seat | 26.00 | double |
| class1\_student | To store price for class 1 student seat | 17.00 | double |
| class1\_child | To store price for class 1 child seat | 13.00 | double |
| class2\_adult | To store price for class 2 adult seat | 20.00 | double |
| class2\_student | To store price for class 2 student seat | 14.00 | double |
| class2\_child | To store price for class 2 child seat | 10.00 | double |

**Variables**

|  |  |  |
| --- | --- | --- |
| Variable name | Description | Data type |
| class\_required | To store number of class chose by user | int |
| adult\_seat | To store number of adult seat required by user | int |
| student\_seat | To store number of student seat required by user | int |
| child\_seat | To store number of child seat required by user | int |
| adult\_seat\_counter | To count number of adult seat required by user | int |
| student\_seat\_counter | To count number of student seat required by user | int |
| child\_seat\_counter | To count number of child seat required by user | int |
| total\_seat | To store total seat required by user | int |
| total\_seat\_sold | To store total seat sold and show in sales report | int |
| adult\_seat\_counter\_for\_report | To store total of adult seat and show in sales report | int |
| student\_seat\_counter\_for\_report | To store total of student seat and show in sales report | int |
| child\_seat\_counter\_for\_report | To store total of child seat and show in sales report | int |
| movie\_name\_code | To store movie name code entered by user | int |
| movie\_time\_code | To store movie time code entered by user | int |
| adult\_seat\_price | To store price of adult seat for class user choose | double |
| student\_seat\_price | To store price of student seat for class user choose | double |
| child\_seat\_price | To store price of child seat for class user choose | double |
| cash\_payment | To store amount of cash user pay | double |
| balance\_amount | To store amount of balance after minus total amount user need to pay with cash pay by user | double |
| adult\_sales\_total | To store total adult sales and show in report | double |
| student\_sales\_total | To store total student sales and show in report | double |
| child\_sales\_total | To store total child sales and show in report | double |
| adult\_seat\_amount | To store amount need to pay by user for adult seat | double |
| student\_seat\_amount | To store amount need to pay by user for student seat | double |
| child\_seat\_amount | To store amount need to pay by user for child seat | double |
| total\_seat\_amount | To store total amount need to pay by user | double |
| total\_pct\_sold | To store overall percentage of total seat sold | double |
| total\_sales | To store total sales amount for all class | double |
| answer | To store character entered by user at beginning | char |
| movie\_name[31] | To store string of the movie name choose by user | char |
| movie\_time[31] | To store string of the movie time choose by user | char |
| next | To store character entered by next customer or admin to continue buy ticket or view sales report | char |

**Array**

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| --- | --- | --- | --- |
| Array name | Description | Value stored | Data type |
| class\_seat\_no[] | To store seat number for each class | { 000, 100, 200 } | int |
| class\_seat[] | To store number of seat available for each class | { 15, 15, 30 } | int |
| class\_counter\_for\_pct[3] | To store total seat sold in each class to calculate percentage and show in report | { 0, 0, 0 } | int |
| class\_seat\_left[3] | To store number of seat left after minus class\_seat[] with class\_seat\_counter[] | { 0, 0, 0 } | int |
| class\_seat\_counter[3] | To store number of seat sold in each class | { 0, 0, 0 } | int |
| class\_ticket\_counter[3] | To control loop when printing ticket | { 0, 0, 0 } | int |
| class\_pct\_sold[3] | To store percentage of seat sold in each class | { 0, 0, 0 } | int |

**Overall Program Design**

**Program Testing & Outputs**

**First Scenario - At least one class chosen twice, some seats still available at the end.**

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| Loop # | Input | | | |  | | | | | |
| Seat Class | Adult | Child | Student | Total Seat | Seat Number | Ticket Charges | | | |
| Adult | Child | Student | Total |
| 1 | 0 | 2 | 1 | 0 | 3 | 001 - 003 | 60 | 15 | 0 | 75 |
| 2 | 1 | 3 | 4 | 1 | 8 | 101 - 108 | 78 | 52 | 17 | 160 |
| 3 | 2 | 0 | 1 | 2 | 3 | 201 - 203 | 0 | 10 | 28 | 38 |
| 4 | 0 | 2 | 2 | 2 | 6 | 004 - 009 | 60 | 30 | 40 | 130 |
| 5 | 1 | 1 | 2 | 3 | 6 | 109 - 114 | 26 | 26 | 51 | 103 |
|  | Total | 8 | 10 | 8 | 26  Seat still available:  Class 0: 6 (010 - 015)  Class 1: 1 (115)  Class 2: 17 (204 - 230) | | 224 | 133 | 136 | 493 |

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| **First loop** |  |
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| **Second loop** |  |
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|  | **Third loop** |
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| **Fourth loop** |  |
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| **Fifth loop** |  |
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**Second Scenario - No more seats available at the end.**

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| Loop # | Input | | | |  | | | | | |
| Seat Class | Adult | Child | Student | Total Seat | Seat Number | Ticket Charges | | | |
| Adult | Child | Student | Total |
| 1 | 0 | 2 | 2 | 3 | 7 | 001 - 007 | 60 | 30 | 60 | 150 |
| 2 | 2 | 3 | 9 | 5 | 17 | 201 - 217 | 60 | 90 | 70 | 220 |
| 3 | 2 | 6 | 4 | 3 | 13 | 218 - 230 | 120 | 40 | 42 | 202 |
| 4 | 1 | 5 | 3 | 7 | 15 | 101 - 115 | 130 | 39 | 119 | 288 |
| 5 | 0 | 2 | 2 | 4 | 8 | 008 - 015 | 60 | 30 | 80 | 170 |
|  | Total | 18 | 20 | 22 | 60  Seat still available:  Class 0: 0  Class 1: 0  Class 2: 0 | | 430 | 229 | 371 | 1030 |

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| **First loop** |  |
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| **Second loop** |  |
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| **Third loop** |  |
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|  | **Fourh loop** |
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| **Fifth loop** |  |
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**Third Scenario - No one purchase class 0 seats as seat price for this class is too expensive!**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Loop # | Input | | | |  | | | | | |
| Seat Class | Adult | Child | Student | Total Seat | Seat Number | Ticket Charges | | | |
| Adult | Child | Student | Total |
| 1 | 1 | 0 | 0 | 6 | 6 | 101 - 106 | 60 | 30 | 60 | 150 |
| 2 | 2 | 4 | 1 | 5 | 10 | 201 - 210 | 60 | 90 | 70 | 220 |
| 3 | 2 | 5 | 2 | 6 | 13 | 211 - 223 | 120 | 40 | 42 | 202 |
| 4 | 1 | 3 | 3 | 3 | 9 | 107 - 115 | 130 | 39 | 119 | 288 |
| 5 | 2 | 0 | 0 | 7 | 7 | 224 - 230 | 60 | 30 | 80 | 170 |
|  | Total | 12 | 6 | 27 | 45  Seat still available:  Class 0: 15 (001-015)  Class 1: 0  Class 2: 0 | | 258 | 69 | 405 | 732 |

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| **First loop** |  |
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|  | **Second loop** |
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|  | **Third loop** |
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| **Fourth loop** |  |
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|  | **Fifth loop** |
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**Further explanation**