

Take Test: Assignment

Test Information

Description **This Assignment is Due Oct 3rd at 23.59.**

NOTE: If you decide to save your answers with the aim of continuing at a later time, then make sure to click the save button on blackboard and also make an extra back-up, e.g., taking a screenshot.

Instructions

Multiple This Test allows multiple attempts.

🚩 Question Completion Status:

Completion

QUESTION 1

1 points

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Imagine that an employer would like to hire you. The employer would like to see how well you understand MVC in .NET. The employer has given you a task. The task is for you to develop an ASP.NET MVC Web App that contains new webpages that show the following:

- General description of your experiences in relation to software engineering or software technology, programming languages etc. and a brief resume/cv (it doesn't have to be accurate information – I guess you can be creative :))
- List of courses that you have taken during your bachelor program

You may re-use the application from the previous lab and modify it in order to answer this question.

Selected Answer: [aldus17Portfolio.zip](#)

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QUESTION 2

1 points

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Explain the relationship between key files in your ASP.NET Core MVC app:

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

application and a new developer (that has never tried the current ASP.NET Core MVC app tutorial before) should understand if she/he would need to maintain or add new features/functionalities to my application in the future". You may use diagrams (e.g., UML) and text in your explanation.

In terms of the length of your answer, try to not go over a single page.

Selected [MvcAndRelationshipBetweenKeyFiles.pdf](#)

Answer:

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QUESTION 3

Question Completion Status:

ASP.NET Core MVC app. Every public method in a controller is callable as an HTTP endpoint

- ☒ True
☐ False

QUESTION 4

1 points

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ASP.NET Core MVC app: MVC invokes View classes and the action methods within those classes.

- ☐ True
☒ False

QUESTION 5

1 points

Saved

ASP.NET Core MVC app: MVC invokes controller classes and the action methods within those classes.

- ☒ True
☐ False

QUESTION 6

1 points

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Evaluate the class diagram shown in the link below against the list of requirements below. Which requirements is incorrectly or not addressed at all in the class diagram? (just list the requirements).

In order to answer the question, carefully check whether each statement below is correctly or incorrectly addressed in the class diagram.

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

- b. An address, which is a simple string
- c. A phone number, which is a simple string

[R2] Schools are organized in departments. A department has the following properties:

- a. A name, which is a simple string.
- b. Exactly one chairperson, which is a teacher; the chairperson is chairing exactly one department.
- c. A department belongs to exactly one school, while a school can comprise one or many departments.

[R3] Teachers teach their courses, which are offered by the departments. A teacher has the following properties:

❖ Question Completion Status:

- b. A teacher is assigned to at least one department, while a department comprises at least one teacher.
- c. A teacher can teach multiple courses, while a course needs to have at least one teacher assigned.

[R4] Departments offer courses. A course has the following properties:

- a. A name, which is a simple string.
- b. A course ID, which is a simple integer.
- c. A course is offered by exactly one department, and departments offer at least one course.

[R5] Students participate in courses. Students have the following properties:

- a. A name, which is a simple string.
- b. A student id, which is a simple integer.
- c. Students can take many courses, and courses can have many students enrolled.
- d. Students can be enrolled in one or many schools, and schools have many students enrolled.

[R6] The overall system allows for:

- a. Querying all teachers assigned to a department via a method GetAllTeachers.
- b. Querying all courses offered by a department via a method GetAllCourses.
- c. Querying all departments of a school via a method GetAllDepartments.
- d. Querying all students enrolled in a school via a method GetAllStudents.

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

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<p>a is correct</p> <p>b is correct</p> <p>c is correct</p> <p>d is incorrect as the students can only be part of one school</p> <p>R6)</p> <p>a is correct</p>														

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QUESTION 7

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Which of the following will have the least effect on designing software architecture?

- ☐ Users
- ☐ Functional requirements
- ☒ Testing process
- ☐ Non-functional requirements

QUESTION 8

1 points

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Which of the following characteristics of requirements have impact on how the architecture is designed? (hint: they are also referred to as Architecture Significant Requirements (ASR))

- ☐ Only reliability, availability, security and modifiability requirements.
- ☒ non-functional requirements
- ☒ Quality Requirements that have a profound impact on the “core” design of the architecture

QUESTION 9

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- ☐ As a customer I can make a reservation to go from Copenhagen to Suva in Fiji.
- ☒ As a frequent flyer I can collect miles from my flights with the airline and other partner airlines (Think about Star Alliance, e.g., if you are frequent flyer with SAS, you can get miles if you fly with Singapore Airlines, Lufthansa, or other Star Alliance partners).
- ☐ As a customer, I can choose which meal I want when making a reservation.
- ☐ As a revenue manager, I can allow flights to be overbooked, in case of cancellations.
- ☒ As a system administrator, in the near future, I want to be able to port our data from current Oracle database to AWS.

🚩 Question Completion Status:

- ☐ As an employee I can view all reservations.

QUESTION 10

1 points

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When using the 4+1 view model, which of the views would you use to help stakeholders understand the functional requirements of the system?

- ☒ Logical view
- ☐ Data view
- ☐ Process View
- ☐ Deployment View

QUESTION 11

1 points

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Which tactics improves Modifiability?

- ☐ Reduce Cohesion
- ☒ Reduce coupling
- ☒ Avoid God classes
- ☐ Increase coupling

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

- ☐ High cohesion and low coupling
- ☒ Multi-tier architecture
- ☐ MVC architecture
- ☒ Load balancer
- ☐ Layered architecture

QUESTION 13**1 points**

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Question Completion Status:

- ☐ Reliability, Integrity and Availability
- ☐ Confidentiality, Interoperability and Availability
- ☐ Performance, Integrity and Availability
- ☒ Confidentiality, Integrity and Availability

QUESTION 14**1 points**

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Which of the following is a process for analyzing the design of a software system for the purpose of identifying and prioritizing security issues and vulnerabilities?

- ☒ Threat modeling
- ☐ Penetration testing
- ☐ ATAM
- ☐ STRIDE
- ☐ Attack libraries

QUESTION 15**1 points**

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True/False: Layered architecture is the same as multi-tier architecture.

- ☐ True
- ☒ False

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

True/False: N-Tiers refers to the physical allocation of the layers from the layered architecture.

- ☒ True
- ☐ False

QUESTION 17**1 points**

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The problem with a 2-tier or a simple client-server application is that there is a single point of failure.

- ☒ True
- ☐ False

Question Completion Status:**QUESTION 18****1 points**

Saved

Typically words like presentation layer, business layer, and data access layer are used in the context of a layered architecture.

If you were developing an application similar to blackboard, where would you define custom rules for data manipulation. For example, a rule that states that "users cannot disallow a student to sit for the exam if they have passed two assignments."

- ☐ Presentation layer
- ☒ Business layer
- ☐ Data access layer

QUESTION 19**1 points**

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Typically words like presentation layer, business layer, and data access layer are used in the context of a layered architecture.

If you were developing an application similar to blackboard, where would you put code for database access and data manipulation (e.g., updating and deleting data)?

- ☐ Presentation layer
- ☐ Business layer
- ☒ Data access layer

QUESTION 20

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

- ☐ True
- ☒ False

QUESTION 21**1 points**

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___ is the automatic creation of the database context and CRUD (create, read, update, and delete) action methods.

- ☐ Data modeling
- ☒ Scaffolding
- ☐ CRUD operation creation

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QUESTION 22**1 points**

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Which list shows a correct list of the benefits of following an MVC or layered architecture pattern?

- ☐ Separation of concerns; promotes low cohesion and high coupling; minimize ripple effect of changes; Improves code re-use
- ☒ Separation of concerns; promotes high cohesion and low coupling; minimize ripple effect of changes; Improves code re-use
- ☐ Separation of concerns; promotes low cohesion and high coupling; increases ripple effect of changes; Improves code re-use
- ☐ Separation of concerns; promotes high cohesion and low coupling; increases ripple effect of changes; reduces code re-use

QUESTION 23**1 points**

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What non-functional attributes (or quality attribute) were targeted by the use of the following: Load balancing tactic and Active Redundancy tactic

- ☒ Performance
- ☐ Interoperability
- ☒ Availability

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QUESTION 24**1 points**

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Which design principle is violated in the code below? Explain the violation (50 words max.)

```
using System;

namespace DES.Exam.Trains
{
    class Engine
    {
        public void Start()
        { // code to start
        }
    }
}
```

Question Completion Status:

```
    public Train() { engine = new Engine(); }
    public Engine MyEngine
    {
        get { return engine; }
    }
}

class Driver
{
    private Train train;
    public void Drive()
    {
        train = new Train();
        train.MyEngine.Start();
    }
}

class DoMainStuff
{
    public static void Main(string[] args)
    { //
    }
}
```

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

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The Driver class is acting as a god class as it instantiates a train and starts the train (A train can only exist when a driver is instantiated), therefore the design principle of separation of concerns and is violated due to that fact.

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

QUESTION 25**1 points**

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In this task, you'll design and implement (in C#) a small and basic tennis game simulator. See the following PDF for a more detailed description of the task: [Tennis Game.pdf](#)

Selected Answer: [aldus17TennisGameSimulator.zip](#)

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Click Save and Submit to save and submit. Click Save All Answers to save all answers.