



FACULTY OF SCIENCE

ACADEMY OF COMPUTER SCIENCE AND SOFTWARE ENGINEERING

MODULE	IFM02B2/IFM2B10 INFORMATICS 2B
CAMPUS	AUCKLAND PARK CAMPUS (APK)
EXAM	SSSA EXAM 2020

DATE: 2021-02-09

SESSION: 15:00

ASSESOR(S):

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K. LEBEA

INTERNAL MODERATOR:

W.S. LEUNG

DURATION: 120 MINUTES

MARKS: 100

Please read the following instructions carefully:

1. An additional 30 minutes submission time will be allowed.
2. Answer **all** questions.
3. Answer each question in its entirety before moving on to the next.
4. **Submit** your answers in a **single PDF document**.
5. This paper consists of 5 pages, excluding this cover page.

QUESTION 1

You have just been hired for your first job at a car rental agency. In this job, you are required to analyse the company's business processes and help plan their e-commerce strategy. During your first meeting, your boss wants you to explain how they can use the Web to increase sales and communicate better with their customers.

Using the knowledge gained during this module, answer the following questions:

- (a) List two activities and two transactions that employees would regularly do at a car rental agency. Clearly state which are transactions. [4]
- (b) What category of e-commerce would this company fall under? [1]
- (c) Name two revenue strategies that you feel would best suit the new Web site. [2]
- (d) The car rental agency would also like to sell older vehicles, that they can no longer rent out, on the Web site. Are car sales well-suited to e-commerce or traditional commerce? Motivate your answer. [3]
- (e) Give two transaction costs that the agency will incur in selling those old vehicles. [2]
- (f) Name three (3) other businesses that would be part of the same industry value chain as the car rental agency. [3]

Total: 15

QUESTION 2

- (a) The figure below shows assessment data marked up using HTML tags. Mark up the data using XML instead. [8]

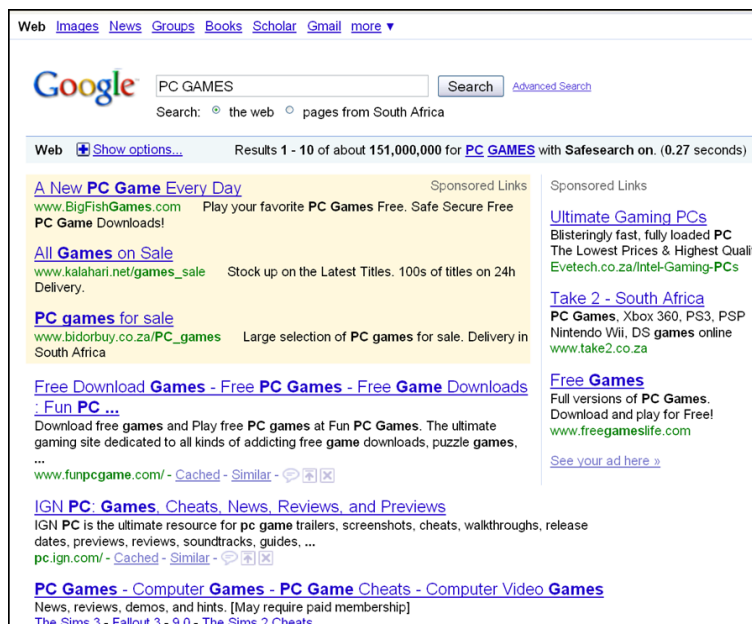
```
1 <html>
2   <head>
3     <title>Assessments</title>
4   </head>
5   <body>
6     <h1>Assessments</h1>
7
8     <h2>AssessmentName</h2>
9     <h3>Date</h3>
10    <h4>Scope</h4>
11    <h5>TotalMarks</h5>
12
13    <h2>Semester Test 1</h2>
14    <h3>2020-08-26</h3>
15    <h4>Chapter 1-4</h4>
16    <h5>75</h5>
17
18    <h2>Semester Test 2</h2>
19    <h3>2020-09-09</h3>
20    <h4>All practical content</h4>
21    <h5>75</h5>
22
23    <h2>Examination</h2>
24    <h3>2020-11-02</h3>
25    <h4>All chapters</h4>
26    <h5>100</h5>
27  </body>
28 </html>
```

- (b) Give an Internet connection option that would be suitable for a small business located in a rural area. [1]
- (c) A business spends R100 000 on an advertising campaign to attract customers to its new Web site. The advertisement is viewed by 50 000 people, 2000 of whom visit the Web site. 1000 make a purchase, and 200 become repeat shoppers. Calculate the following metrics: [6]
- Acquisition cost
 - Conversion rate
 - Retention rate

Total: 15

QUESTION 3

- (a) Consider the Web site in the figure below. Determine the revenue model used and provide reasons for your answer. Discuss the revenue model. [6]



- (b) In order to start working as a content creator, Tumi needs a new laptop and video equipment, as well as a broadband Internet connection. Overall, Tumi will have costs of R80 000 for the year. Calculate Tumi's maximum potential ROI at the end of the year, assuming 100 work days and revenue of R3000 per day. [3]
- (c) Your friend has been inundated with spam emails of late. He has asked your advice on what he can do to improve his situation. Advise your friend on three ways in which he, as an individual, can limit the spam he receives. Motivate your answers by discussing how/why each of your suggestions limits his exposure to spam. [6]

Total: 15

QUESTION 4

- (a) What is a backdoor, and why do programmers build them? [2]
- (b) Give an example of an integrity violation. [2]
- (c) Use the risk management model to decide on the appropriate action for the following threats to a car. [4]
- Theft
 - Accident
 - Equipment failure
 - Wear and tear
- (d) Establish a security policy for a grocery store. [6]
- (e) The value of Bitcoin has fluctuated widely since its inception. Discuss the reasons why a cryptocurrency might fluctuate more than most other currencies. [3]

(f) Explain how a phishing attack could be used to perpetrate identity theft.

[3]

Total: 20

QUESTION 5

RoadAssist is a software development firm that specialises in automotive insurance industry systems. They develop and maintain software that helps call centre operators to handle emergency roadside calls, and locate and assign first responders based on their proximity to the client. The system also handles billing and claiming with insurance providers.

You have been employed by RoadAssist to be their code analyst. Your job role is to review the code and evaluate whether the systems that have been developed are ready to go into production and deployed to the different companies that RoadAssist serves.

While in the last phase of testing their latest software, you noticed a bug in the system. The fault you identified causes calls to sometimes be dropped instead of being queued when all operators are busy. Because the call centers handling life-and-death emergency calls, this glitch has potentially life-threatening consequences. After you reported the issue to the project manager and strongly insisted that the system has to go back to development and worked on again, the project manager asked that you not report the issue to anyone. The project manager's reasoning was that the project was already past its expected completion date, and any delay would cause RoadAssist to lose the contract and revenue that they desperately need. The project manager instructed you to ignore the fault for the meanwhile so that the system can be deployed and RoadAssist can receive payment while they work on a patch that will be deployed to fix the issue.

- (a) As an IT professional, would you carry out your boss's instructions? Justify your answer by referring to any professional code of ethics that you have learned during the semester. Include in your discussion if you think IT professionals need to have a code of ethics, and the reasons for your choice.

[10]

Total: 10

QUESTION 6

- (a) Name 3 ways of maintaining state in an ASP.Net Web Application. [3]
- (b) Define business intelligence, and why it is an important part of running a business, along with examples of where it would apply. [6]
- (c) Explain in detail how you would implement a persistent shopping cart in a ASP.Net Web Application. [5]
- (d) What are three purposes of a MasterPage in an ASP.Net Web application? [3]
- (e) Consider the following partial implementation of a login function. The connection to the database is called Exam.SSA.dbml, the user object has been created for you using the database table shown below. [8]
- Implement** the login function used in line 19 and,
 - Fill in the missing lines** of code where the comments are (line 27 and 28).

```
1 CREATE TABLE [dbo].[SystemUser] (  
2     [Id]          INT          IDENTITY (1, 3) NOT NULL,  
3     [Name]        VARCHAR (50) NOT NULL,  
4     [Surname]     VARCHAR (50) NOT NULL,  
5     [Email]       VARCHAR (50) NOT NULL,  
6     [Password]    VARCHAR (MAX) NOT NULL,  
7     [Active]      BOOL        NOT NULL,  
8     PRIMARY KEY CLUSTERED ([Id] ASC)  
9 );  
10  
11 namespace IFM2B10_Exam_2020-SSSA  
12 {  
13     public partial class LoginPage : System.Web.UI.Page  
14     {  
15         Exam_SSSA_ServiceClient SC = new Exam_SSSA_ServiceClient();  
16  
17         protected void login_Click(object sender, EventArgs e)  
18         {  
19             int UserID = SC.login(Email.Value, Password.Value);  
20  
21             if (UserID == 0)  
22             {  
23                 error.Visible = true;  
24             }  
25             else  
26             {  
27                 //create a session called "loggedIn" using the UserID  
28                 //navigate back to Home.aspx  
29             }  
30         }  
31     }  
32 }
```

Total: 25

— End of paper —