UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 5, Examination in Engineering, July 2016

Module Number: EE5207 Module Name: Internet Technologies Part - II

[1 hour and 45 minutes]

[Answer **all questions**, each question carries 5 marks]

Q1. a) Figure Q1.a shows the relationship among Course, Enrollment, Student and Department entities. Write the four model classes and DBContext class which can be used in Entity Framework code first approach.

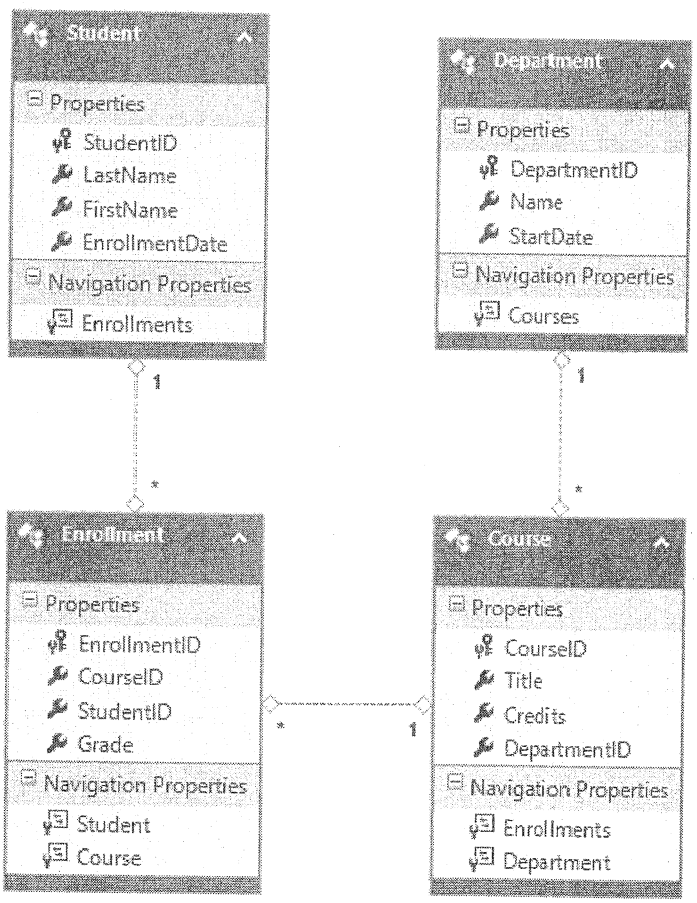

Figure Q1.a: Relationship between entities

[5 marks]

Q2. a) The code in Listing 1 is written using Node.js. Explain the purpose of each line.

Listing 1: Node.js code

```
var http = require("http");

function onRequest(request, response) {
  console.log('request received');
  response.writeHead(200, {"Content-Type": "text/plain"});
  response.write("Hello World");
  response.end();
}

http.createServer(onRequest).listen(8888);

console.log('Server started on localhost:8888;
                    press Ctrl-C to terminate....');
```

[2 marks]

b) What is Express framework for Node.js and mention an advantage of using it.

[1 mark]

c) Explain the behavior of code segment given in Listing 2.

Listing 2: Node.js code

```
var express = require('express');
var app = express();

var handlebars = require('express-handlebars')
    .create({ defaultLayout:'main' });
app.engine('handlebars', handlebars.engine);
app.set('view engine', 'handlebars');
app.set('port', process.env.PORT ||3000);

app.use(express.static(__dirname + '/public'));
app.get('/',function (req,res) {
  res.render('faculty');
});

app.listen(app.get('port'),function () {
  console.log('express started on http://localhost:'+
    app.get('port') +'; press Ctrl-C to terminate'
);
});
```

[2 marks]

Q3. a) The JSON object representing tour data is given in Listing 3 .

Listing 3: JSON object

```
var data  = {
  currency: {
    name: 'United States dollars',
    abbrev: 'USD',
  },
  tours: [
    { name: 'Hood River', price: '$99.95' },
    { name: 'Oregon Coast', price: '$159.95' },
    { name: 'Sri Lanka', price: '$4159.95' },
  ],
  specialsUrl: '/january-specials',

}
```

i) How do you pass this object to handlebars file tours.handlebars?
ii) display details of the tours in that file.
iii) if a special url is given display the link.

[2 marks]

b) Explain the behavior of the code in Listing 4.

Listing 4: Node.js code

```
var express    = require('express');
var app        = express();
var bodyParser = require('body-parser');

var mongoose   = require('mongoose');
mongoose.connect('mongodb://localhost/test1');
var Bear       = require('./models/bear');

app.use(bodyParser.urlencoded({ extended: true }));
app.use(bodyParser.json());

var port = process.env.PORT || 8080;

var router = express.Router();


router.get('/', function(req, res) {
  res.json({ message: 'hooray! welcome to our api!' });
```

```
});

router.route('/bears')
  .post(function(req, res) {

    var bear = new Bear();
    bear.name = req.body.name;


    bear.save(function(err) {
      if (err)
        res.send(err);
      res.json({ message: 'Bear created!  : '+ bear.name });
    });

  })
  .get(function(req, res) {
    Bear.find(function(err, bears) {
      if (err)
        res.send(err);
    res.json(bears);
  });
});

app.use(router);
app.listen(port);
console.log('Magic happens on port ' + port);
```

[3 marks]

Q4. a) Explain the MVC design pattern in ASP.NET MVC.

[1 mark]

b) Explain the ASP.NET MVC default routing.

[1 mark]

c) You have created an empty controller named HelloController.

i) Write Hello action method which returns an greeting message.

ii) Write Hello2 action method which takes name as URL input and print a greeting message "Hello " + name;

iii) Write Hello3 method which takes string name and integer nTimes as input parameters and print the greeting message nTimes in Hello3.chtml razor view.

[3 mark]

Q5. a) Explain the steps of creating StudentController controller with Entity Framework model you created for the Model in Figure Q1.a to List, Create, Edit and Delete Students.

[1 mark]

b) When you click the title of Last name column, you need to sort data in the table. Explain how you would do it by changing the Index method. given below.

```
public ViewResult Index()
{
    return View(db.Students.ToList())
}
```

[2 mark]

c) Change the Index method in part (b) to insert a search string and display students whose first name or last name contains the search string.

[2 marks]