KISII UNIVERSITY
UNIVERSITY EXAMINATIONS
THIRD YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF
BACHELOR OF SCIENCE IN APPLIED COMPUTER SCIENCE
SECOND SEMESTER 2023/2024
[JAN – APRIL, 2024]

BIT 300: WEB PROGRAMMING II

STREAM: Y3 S2   **TIME: 2 HOURS**

DAY: MONDAY, 9:00 - 11:00 A.M.   **DATE: 08/04/2024**

INSTRUCTIONS

1. *Do not write anything on this question paper.*
2. *Answer question ONE (Compulsory) and any other TWO questions.*

QUESTION ONE
a) Describe in detail what Fragmenting is. Give an example in code   (10 marks)
b) Write an entity class for a table called topics with two columns, id a long int with auto-increment, and name a string with a max of 70 characters. Observe naming conventions. You are free to use any relevant annotations.   (10 marks)
c) Explain in detail what @GetMapping annotation is for. Give an example in code
(10 marks)

QUESTION TWO
a) Discuss the functions of dependencies in spring boot   (5 marks)
b) Explain clearly what purpose do annotations serve in Spring boot.   (5 marks)
c) Explain are the benefits of a template   (5 marks)
d) Discuss the differences between a class and an interface   [5 marks]

QUESTION THREE
a) In spring boot the JPA creates the database tables based on the classes. Declare a class with a column name hallcount of type Integer with a default value of 0 (zero)   (10 marks)
b) Write an example in spring boot code that declares a method using @PostMapping
(10 marks)

Consider Code Listing 1 below and answer questions 4 & 5
```
1.  package com.soen.controller;
2.
3.  import java.util.List;
4.  import java.sql.Date;
```

```java
5.
6.    import org.springframework.beans.factory.annotation.Autowired;
7.    import org.springframework.data.domain.Page;
8.    import org.springframework.stereotype.Controller;
9.    import org.springframework.ui.Model;
10.   import org.springframework.web.bind.annotation.GetMapping;
11.   import org.springframework.web.bind.annotation.ModelAttribute;
12.   import org.springframework.web.bind.annotation.PathVariable;
13.   import org.springframework.web.bind.annotation.PostMapping;
14.   import org.springframework.web.bind.annotation.RequestMapping;
15.   import org.springframework.web.bind.annotation.RequestParam;
16.
17.   import com.soen.entity.Samaw;
18.   import com.soen.service.SamawService;
19.
20.   @Controller
21.   @RequestMapping("/samax")
22.   public class SamawController {
23.
24.      @Autowired
25.      private SamawService samawService;
26.
27.      @GetMapping("/")
28.      public String viewHomePage(Model model) {
29.         return findPaginated(1, "name", "asc", model);
30.      }
31.
32.      @GetMapping("/addsamaw")
33.      public String showNewSamawForm(Model model) {
34.         Samaw samaw = new Samaw();
35.         model.addAttribute("samaw", samaw);
36.         model.addAttribute("standardDate", getuKusamaw());
37.         return "smk/newsamaw";
38.      }
39.
40.      private Date getuKusamaw() {
41.         long millis=System.currentTimeMillis();
42.         Date date=new java.sql.Date(millis);
43.         return date;
44.      }
45.
46.      @PostMapping("/savesamaw")
47.      public String saveSamaw(@ModelAttribute("samaw") Samaw samaw, Model
      model) {
48.         samawService.saveSamaw(samaw);
49.         model.addAttribute("samaw", samaw);
50.         return "smk/updatesamaw";
51.      }
52.
53.      @GetMapping("/UpdateSamaw/{id}")
54.      public String showSamawUpdate(@PathVariable ( value = "id") long id, Model
      model) {
55.         Samaw samaw = samawService.getSamawById(id);
56.         model.addAttribute("samaw", samaw);
```

```
57.        return "smk/updatesamaw";
58.    }
59.
60.    @GetMapping("/rusiesamaw/{id}")
61.    public String deleteSamaw(@PathVariable (value = "id") long id) {
62.        this.samawService.deleteSamawById(id);
63.        return "redirect:/samax/smk/samawlist";
64.    }
65.
66.    @GetMapping("/page/{pageNo}")
67.    public String findPaginated(@PathVariable (value = "pageNo") int pageNo,
68.            @RequestParam("sortField") String sortField, @RequestParam("sortDir")
    String
69.            sortDir, Model model) {
70.        int pgSize = 5;
71.
72.        Page<Samaw> page = samawService.findPaginated(pageNo, pgSize, sortField,
    sortDir);
73.        List<Samaw> listSamaws = page.getContent();
74.
75.        model.addAttribute("currentPage", pageNo);
76.        model.addAttribute("totalPages" , page.getTotalPages());
77.        model.addAttribute("totalItems" , page.getTotalElements());
78.
79.        model.addAttribute("sortField", sortField);
80.        model.addAttribute("sortDir", sortDir);
81.        model.addAttribute("reverseSortDir", sortDir.equals("asc") ? "desc" : "asc");
82.
83.        model.addAttribute("listSamaws", listSamaws);
84.         model.addAttribute("standardDate", getuKusamaw());
85.        return "smk/samawlist";
86.    }
87.
88. }
```

Code Listing 1

QUESTION FOUR
a) Explain the instruction at line 21   (5 marks)
b) Explain the instruction at line 2   (5 marks)
c)
d) Re-write lines 34 and 35 as one instruction   (5 marks)
e) Explain the instruction at line 46   (5 marks)

QUESTION FIVE
a) Explain what the instructions from line 53 to 58 does   (5 marks)
b) Explain the instructions at line 61   (5 marks)
c) What does the instruction at line 80 do?   (5 marks)
d) What does the instruction at line 83 do?   (5 marks)