|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| KSU_logo.jpg | | **King Saud University**  **College of Computer and Information Sciences**  **Computer Science Department** | | | | |
|  | |  | | | | |
| **Course Code:** | CSC 111 | | | |
| **Course Title:** | Introduction to Programming | | | |
| **Semester:** | Spring 2012 | | | |
| **Exam:** | **Mid 1 Exam** | | | |
| **Duration** : | 2 Hours | | |  |
| Student Name: | |  | | | |
| Student ID: | |  | | | |
| Student Section No. | |  | | | |
|  | | | | | |
| **Tick the Relevant** | **Computer Science B.Sc. Program ABET Student Outcomes** | | | **Question No. Relevant Is Hyperlinked** | **Covering**  **%** | |
| √ | 1. **Apply knowledge of computing and mathematics appropriate to the discipline;** | | | **1,2** | **48** | |
|  | 1. **Analyze a problem, and identify and define the computing requirements appropriate to its solution** | | |  |  | |
| √ | 1. **Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;** | | | **3,4** | **52** | |
|  | 1. **Function effectively on teams to accomplish a common goal;** | | |  |  | |
|  | 1. **Understanding of professional, ethical, legal, security, and social issues and responsibilities;** | | |  |  | |
|  | 1. **Communicate effectively with a range of audiences;** | | |  |  | |
|  | 1. **Analyze the local and global impact of computing on individuals, organizations and society;** | | |  |  | |
|  | 1. **Recognition of the need for, and an ability to engage in, continuing professional development;** | | |  |  | |
| √ | 1. **Use current techniques, skills, and tools necessary for computing practices.** | | |  |  | |
|  | 1. **Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;** | | |  |  | |
|  | 1. **Apply design and development principles in the construction of software systems of varying complexity;** | | |  |  | |

**Question 1 (8 Marks):**

1. Circle the operator which is not a relational operator?
2. ==
3. <
4. !=
5. &&
6. >=
7. If **value** is a Boolean variable, which of the following logical expressions always has the value FALSE?
8. value && value
9. value || value
10. value && ! value
11. value || ! value
12. b and d above
13. After execution of the following code, what will be the value of **angle** if the input value is 15?

angle = in.nextInt();

if (angle> 5)

angle = angle + 5;

else if (angle> 10)

angle = angle + 10;

else angle = 5;

1. 5
2. 15
3. 25
4. 20
5. Which statement is correctly written? (suppose that beta is an integer variable and result is a Boolean variable)
   1. result = 0 < beta < 100 ;
   2. result = 0 < beta && beta < 100 ;
   3. result = (0 < beta) && (beta < 100) ;
   4. b and c above
   5. a, b, and c above

**Question 2 (6 Marks):**

**Convert the following switch statement into if –else statement**

String dayString1, dayString2, dayString3;

int day = in.nextInt();

**switch** (day) {

**case** 1: dayString1 = "Saturday";

**case** 2: dayString2 = "Sunday";

**break**;

**case** 3: dayString3 = "Monday";

**break**;

**case** 4: dayString1 = "Tuesday";

**case** 5: dayString2 = " Wednesday";

**break**;

**default**: dayString3 = "Invalid day";

**break**;

}

**Answer :**

if(day==1)

{ dayString1 = "Saturday";

dayString2 = "Sunday";}

else if(day==2)

dayString2 = "Sunday";

else if(day==3)

dayString3 = "Monday";

else if(day==4)

{ dayString1 = "Tuesday";

dayString2 = " Wednesday";}

else if(day==5)

dayString2 = " Wednesday";

else//default

dayString3 = "Invalid day";

**Question 3 (8 Marks):**

**We would like to write a program that reads a number of seconds, a number of minutes and a number of hours . It converts them into seconds and print the result. For that:**

1. determine the input and the output

Input: seconds, menutes , hours

Output: Total seconds

1. list the needed variables and their types

seconds(int), menutes(int) , hours(int), Totalseconds(int)

1. write down a suitable conversion formula(s) that solves the problem

Totalseconds = seconds+ menutes\*60+ hours\*60\*60

1. Suggest and write a complete java program solution

**Answer :**

Import java.util.Scanner;

Public class test{

Public static void main(String [] args){

int seconds, menutes , hours;

Scanner s=new Scanner(System.in);

s.o.pln("Enter seconds, menutes, hours");

Seconds=s.nextInt();

Menutes= s.nextInt();

Hours=s.nextInt();

Totalseconds = seconds+ menutes\*60+ hours\*60\*60;

s.o.pl(" Total Sceonds="+totalseconds);

}}

**Question 4 (8 Marks):**



Consider the class *Pattern* with the following attributes:

*Side1* : represents a length side of the pattern

*Side2* : represents another length side of the pattern

*type* : represents the type of the pattern (rectangle, triangle or square)

*area* : represents the area of the pattern

1. Implement the class *Pattern*.
2. Write a java program that performs the following:
3. creates an object of the class *Pattern*.
4. reads the **needed attributes** and **calculates the area** with respect to the **type** of the pattern according to the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pattern | type | side1 | side2 | area |
| Rectangle | 1 | height | Width | side1\*side2 |
| Triangle | 2 | height | Base | side1\*side2/2 |
| Square | 3 | side | -- | side1\*side1 |

Example if type is 1 the pattern is a rectangle, side1 will represent the height, side2 will represent the width and the area will be equal to side1\*side2.

1. Displays the **name** of the pattern ( rectangle, triangle or square) and its **area**

**Answer :**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Result** | | | | | | | | |
| **Question No.** | **Relevant Student Outcome** | **SO is**  **Covered by %** | **Full Mark** | **Student Mark** | **Assessor’s Feedback** | | | |
| 1 | a | 26 | 8 |  |  | | | |
| 2 | a | 22 | 6 |  |  | | | |
| 3 | c | 26 | 8 |  |  | | | |
| 4 | c | 26 | 8 |  |  | | | |
|  |  |  |  |  |  | | | |
|  |  |  |  |  |  | | | |
| Totals |  | 100% | 30 |  |  | | | |
|  | | |  | | |  |  |  |
|  | | |  | | |  |  |  |
| **I certify that the work contained within this assignment is all my own work and referenced where required.**  **Student Signature: Date:** | | | | | |  | **Feedback Received:**  **Student Signature: Date:** | |