School of Computing and Information Systems

BSC COMPUTER SYSTEMS ENGINEERING

BSC MOBILE AND WEB TECHNOLOGIES

MT103-Computer Programming with JAVA Year 1 Semester2

Title: HR System Assignment

Issue Date: 22/03/2023
Submission Date: 22 /05/2023
Total Marks: 100

Instructions to candidates

1. Candidates must attempt **ALL** questions.
2. You are to make your submission on turn-it-in. You may consult with your tutor/lecturer on how this will be done.
3. Ensure that you have an account on turn-it-in by going to **www.turnitin.com**. Use the credentials provided for accessing this system. If you do not have them, get hold of the tutor/lecturer as soon as possible.
4. Any work with plagiarism level above **30 % will not be marked.** It your responsibility to make sure that your plagiarism level is within this level. Monitor it on regular bases. If your share your solution with others, chances of the plagiarism rising above this level are high.
5. It is your responsibility to ensure that you have **Introduction to Computer Programming with Java** module in turn-it-in before submission date and you do not drop the module. Consult with your tutor/lecturer if this is not the case.

The assignment scenario

As a Junior programmer you have just been hired at a company called Trafalgar tours (Pty) Ltd. The company is a local company that is dealing with preparing tour packages for tourists who visit Botswana. This company is new. However, the demand for tourist activities after the Covid-19 pandemic is very high. The company was forced to hire as many employees as possible in a very short space of time. The total number of employees hired is now 15. The Human Resource is now overwhelmed with handling employee data and managing day to day business activities. They are struggling to capture records electronically, manage allowances, manage leave days. Whilst there is still planning to procure a fully-fledged system for HR Management, you were hired to come up with an interim solution to solve the problems.

You have to store employee records into an array and allow management to manipulate the array and print any report they wish to produce and view.

Employee record is stored as follows in a text file;

A unique employee id, first name, last name, date of birth, gender, address, title of employment, Date Hired, Department, Hours worked, rate of pay, leave days, car allowance, monthly gratuity, tax rate.

System Requirements.

a) To plan, design and create a GUI based Human Resources Management System for the company. **[10 marks]**
b) The system must have the following features. **[50 marks]**
    i. A menu to select an operation.
    ii. Ability to add an employee to an array with a maximum of 10 employees.
    iii. Ability to show all employee details added to the array.
    iv. Ability to search for employees of a chosen title.
    v. Ability to display only males or females employees at a particular time.
    vi. Ability to display all employees and their gross salaries.
    vii. the system should allow a search for an employee and display salary calculated.
    viii. The ability to display the number of employees per city or town

c) OOP Practices – modularize the program through separation of classes, where possible application of inheritance, polymorphism, interfaces. **[15 marks]**
d) Write a brief report about your system including introduction, classes and methods used, testing, challenges and future improvements of the system. **[25 marks]**

Total Marks [100]

Other information to support all the requirements of the 15 employees;

- 4 are marketing executive.
- 4 are Support staff.
- 1 are Human Resources Officer,1 Accounts Officers
- 3 are Temp Staff
- 1CEO,
- 1 Finance Managers
- Employees who receive car allowance are , Hr Officers, Accounts Officers at 15% and CEO at 30%.

Guide Lines

i. Implement your program with a GUI
ii. Your programming method should be Object Oriented i.e. good programming practices such as separation of classes.
iii. Apply OO principles such as abstraction, inheritance, polymorphism and encapsulation.
iv. Provide test cases for your program and show sample input/output outcome.
v. Students must use their own datasets, **sharing data files will attract serious penalties including marking the entire system to 0 marks**.

Marking Template

Marks (%)

A)	OOP Practices – modularization of program through separation of classes, where possible application of inheritance, polymorphism, interfaces. Proper implementation of Encapsulation and abstraction concepts will attract marks. Use of different classes to tackle different tasks Superclass/subclass relationships and or interfaces Use of access modifiers 7 marks (different class) 3 marks (superclass & subclass) 5 marks(Interface)	15 marks
B)	A menu to select an operation Marks 1 marks for displays of menu, 1 marks keyboard input, 1 marks for determining option chosen, 1 marks for loop , 1 marks for error message if wrong option input	5 marks
C)	Ability to add an employee to an array with a maximum of 15 employees. 2 marks for array declaration of array 2 marks for keyboard entry of employee details 2 marks employee object creation 2 marks object storage in array 2 marks array index increment	10 marks
D)	Ability to show all employee details added to the array. 1 mark for loop start 1 mark loop end 1 loop increment	5 marks

	2 marks employee detail display	
E)	Ability to search for employees of a chosen title. 2 marks for input of employee id or names 2 marks loop start 2 marks loop end 2 marks loop increment 2 marks comparison of name or id and display of employee details	10 marks
F)	Ability to display only male or female employees at a particular time. 1 mark input of male or female 1 mark loop start. 1 mark loop end 1 mark loop increment 1 mark check for gender and displays	5 marks
G)	Ability to update any employee record. 1 Mark for searching the record 1 mark loop start. 1 mark loop end 1 mark loop increment 1 mark for deleting the record	5 marks
H)	Ability to display all employees and their gross salaries 2 marks loop start 2 marks loop end 2 marks index increment 2 marks gross salaries calculation 2 marks display of employee details and gross salary.	10 marks

I)	the system should allow a search for an employee and display salary calculated. 1 mark input of employee id or names 1 for loop control 2 mark for comparison of input details and array data 1 mark for display of employee details and calculated salary details	5 marks
J)	The ability to delete employees per city or town 1 mark for obtaining list of towns or cities 1 loop control 1 count per city 2 delete employees per city or town	5 marks
K)	A brief report on your system including introduction, purpose, status report, 10 future development, test cases and conclusion 2 marks introduction 2 marks purpose of the application 2 marks per statement max 3 identification what works (6 Marks max) 2 marks per statement max 3 identification what doesn't work(6 Marks max) 2 marks future developments I mark per point 6 marks, 1 mark per test case 1 mark conclusion	25 marks
	Total	100 marks