Assignment specification

Qualification	Faculty of Information Technology Bachelor of Science in Information Technology		
Module code	ITJA211	**Module name**	Programming in Java
Semester	1/2017	**Year**	2
Module lead	Marwick Makwindi	**Internal moderator**	Ndai Makhurane
Assignment title	Library Booking System	**Total mark allocation**	100
Issue date	13 - 17 February	**Submission date**	27 – 31 March

Instructions to the student
- Remember to keep a copy of all submitted assignments.
- All work must be typed.
- Please note that you will be evaluated on your writing skills in all your assignments.
- All work must be submitted through Turnitin[1] and the full Originality Report must be submitted with the final assignment.
- Negative marking will be applied if you are found guilty of plagiarism, poor writing skills or if you have applied incorrect or insufficient referencing. (See the table at the end of this document where the application of negative marking is explained.)
- Each assignment must include a cover page, table of contents and full bibliography, based on the Harvard Referencing Style as applied at CTI Education Group.
- Use the cover sheet template[2] for the assignment. This is available from your lecturer.
- Students are **not** allowed to offer their work for sale or to purchase the work of other students. This includes the use of professional assignment writers and websites, such as Essay Box. If this should happen, CTI Education Group reserves the right **not** to accept future submissions from a student.

Assignment format
Students must follow the generic **requirements** when writing and submitting assignments as follows:

- Use standard Arial, font size 10.
- Include page numbers.
- Include a title page.
- Print submissions on both sides of the page.
- Write no more than the maximum word limit.
- Ensure any diagrams, screen shots and PowerPoint presentations fit correctly on the page and are referenced.
- Include a table of contents.
- Use accurate Harvard referencing throughout the assignment.
- Include a bibliography based on Harvard Referencing System at the end of the assignment.
- Include completed Assignment Front Cover Sheet and Statement and Confirmation of Own Work (available on MyLMS).
- Check spelling, grammar and punctuation.
- Run the assignment through Turnitin software.
- Students must keep copies of all submitted work.

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[1] Refer to the **CTI Plagiarism Policy**, which is available from your lecturer.

[2] Available on myLMS.

Essential embedded knowledge and skills required of students

- Report-writing skills
- Ability to analyse scenarios/case studies
- Understanding of subject field concepts and definitions
- Ability to apply theoretical knowledge to propose solutions to real-world problems
- Referencing skills (Harvard Referencing Method)

Resource requirements

- A device with Internet access for research
- A desktop or PC for typing assignments
- Access to a library or resource centre
- Prescribed reading resources

Delivery requirements (evidence to be presented by students)

- A typed assignment[3]
- A Turnitin Originality Report

Minimum reference requirements

(At least five references for first year, ten references for second year and fifteen references for third year)

Additional reading is required to complete this assignment successfully. You need to include the following additional information sources:

- Printed textbooks/e-books
- Printed/online journal articles
- Periodical articles (e.g. business magazine articles)
- Information or articles from relevant websites
- Other information sources, e.g. geographic information (maps), census reports, interviews, etc.

Note
- It is crucial that students reference **all** consulted information sources, by means of in-text referencing and a bibliography, according to the Harvard referencing style.   - Negative marking will be applied if a student commits plagiarism (i.e. using information from information sources without acknowledgement and reference to the original source).   - In such cases, **negative marking**, also known as '**penalty scoring**', refers to the practice of subtracting marks for insufficient/incorrect referencing.   - Consult the table at the end of this document, which outlines how negative marking will be applied as well as the way in which it will affect your assignment mark.

	Useful websites
http://	**12manage: a knowledge network about management** [Online] Available at: http://www.12manage.com/ A database that includes articles as well as dictionary and encyclopaedia entries relevant to the management sciences.

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[3] Refer to the **CTI Conditions of Enrolment** for more guidance (available on myLMS).

	Useful websites

Academic Journals
[Online] Available at: http://www.academicjournals.org/all_articles
Academic Journals is a broad-based publisher of peer-reviewed open-access journals.

Bookboon
[Online] Available at: http://bookboon.com/
An online book publishing company that provides students with free access to e-books in a wide variety of subject fields, including Marketing and Human Resources Management.

Business Open Learning Archive (BOLA)
[Online] Available at: http://business.highbeam.com/137662/article-1G1-54905587/bola-business-open-learning-archive
A database, created by Brunel University (Business Division), containing newspaper, magazine and journal articles related to business studies.

Emerald Journals
[Online] Available at:
http://www.emeraldgrouppublishing.com/products/journals/index.htm
An online database of journal and e-journal articles, published by Emerald Group Publishing, on a wide variety of subjects as related to the management sciences, including Marketing, Human Resources Management, Accounting, Finance, Economics, Business Management and Business Strategy.

EBSCO*host*
[Online] Available at: https://www.ebscohost.com/
A research database containing online information resources, including 375 full-text and secondary databases.

The Free Management Library: Online Integrated Library for Personal, Professional and Organizational Development
[Online] Available at: http://managementhelp.org/
An online library containing information on topics related to business, management and organisational development; each topic has additional recommended books in the library.

Google Books
[Online] Available at: https://books.google.co.za/
A Google service that searches the full text of books and magazines that Google has converted into digital format, stored on its (digital) database.

Google Scholar
[Online] Available at: http://scholar.google.co.za/
A search engine that indexes the full text of scholarly (scientific) literature pertaining to a variety of disciplines and in different formats, including online journals and scholarly textbooks.

	Useful websites
	JURN [Online] Available at: http://www.jurn.org/#gsc.tab=0&gsc.q=commerce&gsc.sort= JURN is a unique search-engine primarily dedicated to indexing free and 'open-access' e-journals in the arts and humanities. It is a 'full text finder' that harnesses all the power of Google to search across quality open access content. **NetMBA: a business knowledge centre** [Online] Available at: http://www.netmba.com/ Articles in the subject fields related to Business Administration, including both elementary and advanced topics as well as frameworks and theories involved in solving challenging problems. **Oxford University Press Journals** [Online] Available at: http://www.oxfordjournals.org/en/ Oxford University Press (OUP) publishes the journals and delivers this research to the widest possible audience. **ProvenModels** [Online] Available at: http://www.provenmodels.com/page/about A web-based library of management models aimed at graduates, executives and management consultants.

	A word of caution
	Information available on the World Wide Web (WWW) is not necessarily reliable or of a high academic standard. Therefore, it is essential that you verify online information by comparing such to information in reliable information sources, such as accredited (academic) journals and relevant textbooks written by subject experts.

Assessment criteria assessed

The following criteria are assessed in this assignment:

LO1	**Explain the principles of programming in Java**	**Question no.**
1.1	Discuss the principles, characteristics and features of programming in Java	3.1
1.2	Critically evaluate the environmental flexibility of programming in Java	3.1
LO2	**Design Java solutions**	**Question no.**
2.1	Design a Java programming solution to a given problem	1.1
2.2	Explain the components and data and file structure required to implement a given design	2.2
LO3	**Implement Java solutions**	**Question no.**
3.1	Implement a Java programming solution based on a prepared design	3.1
3.2	Define relationships between objects to implement design requirements	2.1
3.3	Implement object behaviours using control structures to meet the design algorithms	2.1
3.4	Identify and implement opportunities for error handling and reporting	2.1
3.5	Make effective use of an Integrated Development Environment (IDE) including code and screen templates	2.1

Question 1   **20 marks**

Scenario
Study the scenario and complete the questions that follow:

CIT requires a library booking system that will help the librarians manage the books at their campus. The system must allow the user to search, insert and updated books in the database. Each book has a title, ISBN number, author, year, edition, category, publisher and the number of copies available in the library.

The system must allow the user to view the books available in stock and to update any fields of the book if necessary. When inserting a new book into the library the system checks using the book ISBN number if the book is already present in the library database and if it is presents only the number of copies for that book is increased. If the book is not present, then a new book record is inserted in to the database together with its relevant details and its number of copies. A book record in the library database once inserted may not be deleted.

All students who use the library will have their details such as their title, student number, name, surname, cell number and address stored in the database by the system. The system will allow the user to view the student details available in the database and to update any fields of the student if necessary. The system checks the student number before inserting a new student record to make sure no duplicate students are inserted in the database. A student record in the library database once inserted may not be deleted.

The system must enable the user to make bookings for the students. A single student may book many books at once and the system will provide them a random unique booking reference for that transaction. The system will record the booking transaction in the database with the relevant details such as the booking date, booking reference number, book ISBN, book title, student name, student surname and the date when the books where returned by the student.

Every time a booking occurs the number of copies for that book decreases in stock (database) by the number of copies booked. Once a book is returned the number of copies will increase for that book in stock (database) and the return date is recorded for that booking.

The system must be able to show the bookings on a JTable and enable the user to delete or return library books for each booking. You are to design and create the Mysql database for the system. The database must have the relevant tables and fields necessary for the system.

Source: Makwindi 2016

1.1   You are required to design and create using the Java IDE the graphical user interface for the system. Your GUI must be neat and professional.

(20 marks)

Question 2	70 marks

2.1 Using the previous scenario design and create a MySQL database for the system and write the java code to make your system functional. Your program should have the following method names, created as follows.

- **dbConnection()** used to connect to the database.
- **updateBook ()** used for updating books.
- **booking()** used for reserving books.
- **returnBook()** used to return reserved books.

Search methods.

dbSearch() used to call the different search methods. System will then choose which method to use depending on what you want to search for

Note to student
Only use a Switch statement to call the relevant search methods.

- **searchBook()** used to search for a book.
- **searchStudent()** used to search for a student.
- **searchBooking()** used to search for a student.

insert methods.

- **dbInsert()** used to call the different search methods. System will then choose which method to use depending on what you want to insert.

Note to student
Use only the If statement to select the relevant insert method.

- **insertBook()** used to insert a book record.
- **insertStudent()** used to insert a Student record.

(70 marks)

Question 3	10 marks

3.1 Write a method called 'reverse' that returns an array which is the reverse of the one it receives and then write the main method that uses your 'reverse' method to print the reverse of the number array below.

int [] numbers = {34, 78, 2, 4, 5};

(10 marks)

You have now reached the end of this assignment. Please ensure that you have answered all the required questions before submitting your assignment to your lecturer and ensure that you have adhered to all the instructions within this assignment.

Negative marking

Second-year students

- A minimum of ten additional information sources must be consulted and correctly cited.
- If no additional information sources have been used, a full 10% must be deducted.
- Deduct 1% per missing resource of the required ten. For example:
  o If only five resources cited, deduct 5%
  o If only three resources cited, deduct 7%
- Markers must interpret the Turnitin Originality Report to determine actual Overall Similarity Index percentage.
- Markers to apply the penalties for Category A for insufficient sources and incorrect referencing style.
- Markers to apply the penalties/actions for Category B for plagiarism.

Category A

Minimum reference requirements	Deduction of final mark
No additional information sources have been used or referenced.	10%

Category B

Students may not have more than a 20% Overall Similarity Index on Turnitin after analysis of the report.

Interpretation of Turnitin Originality Report
Lecturer to capture the following
1. Original Overall Similarity Index (percentage) of Turnitin report
2. Overall Similarity Index (percentage) after lecturer analysis of Turnitin report (to determine legitimate plagiarism)

Penalties		Action
a.	Less than 20% of the body of assessment (based on Point 2 above)	No action. Mark according to memorandum
b.	More than 20% of the body of assessment and first offence (based on Point 2 above)	Award 0% for the assignment
c.	If more than 70% of the body of assessment	Award 0% and conduct disciplinary hearing