RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Faculty of Engineering & Technology			
Ramaiah University of Applied Sciences			
Department	Computer Science and Engineering	**Programme**	B. Tech. Civil Engineering B. Tech. Computer Science and Engineering B. Tech. Electrical and Electronics Engineering
Semester/Batch	01/2017		
Course Code	ESC108A	**Course Title**	Elements of Computer Science and Engineering
Course Leader(s)	Roopa G., Ami Rai E., Chaitra S.		

Assignment - 02			
Register No.		Name of Student	

Sections		**Marking Scheme**	**Max Marks**	**First Examiner Marks**	**Second Examiner Marks**
Part-A	A1.1	Introduction of IoT and M2M	02		
	A1.2	Discuss the features of IoT	02		
	A1.3	Discuss the features of M2M technology	02		
	A1.4	The stance taken with justification	04		
		Part-A Max Marks	**10**		
Part B.1	B1.1	Introduction and Problem solving approach	02		
	B1.2	Algorithm/Flow chart	02		
	B1.3	Implementation	02		
	B1.4	Results and analysis	02		
	B1.5	Concluding remarks (Summary, limitations, improvements)	02		
		B.1 Max Marks	10		
Part B.2	B2.1	Introduction and Problem solving approach	02		
	B2.2	Algorithm/Flow chart	02		
	B2.3	Implementation	02		
	B2.4	Results and analysis	02		
	B2.5	Conclusion with justification of the chosen searching algorithm	02		
		B.2 Max Marks	**10**		
Part B.3	B3.1	Introduction and Problem solving approach	02		
	B3.2	Algorithm/Flow chart	02		
	B3.3	Implementation	02		
	B3.4	Results and analysis	02		
	B3.5	Concluding remarks (Summary, limitations, improvements)	02		
		B.3 Max Marks	**10**		

Part B.4	B4.1	Introduction and Problem solving approach	02		
	B4.2	Algorithm/Flow chart	02		
	B4.3	Implementation	02		
	B4.4	Results and analysis	02		
	B4.5	Concluding remarks (Summary, limitations, improvements)	02		
		B.4 Max Marks	**10**		
		Total Assignment Marks	**50**		

Course Marks Tabulation				
Component- 1(B) Assignment	**First Examiner**	**Remarks**	**Second Examiner**	**Remarks**
A				
B.1				
B.2				
B.3				
B.4				
Marks (Max 50)				
Marks (out of 25)				
Signature of First Examiner			Signature of Second Examiner	

Please note:

1. Documental evidence for all the components/parts of the assessment such as the reports, photographs, laboratory exam / tool tests are required to be attached to the assignment report in a proper order.
2. The First Examiner is required to mark the comments in RED ink and the Second Examiner's comments should be in GREEN ink.
3. The marks for all the questions of the assignment have to be written only in the **Component – CET B: Assignment** table.
4. If the variation between the marks awarded by the first examiner and the second examiner lies within +/- 3 marks, then the marks allotted by the first examiner is considered to be final. If the variation is more than +/- 3 marks then both the examiners should resolve the issue in consultation with the Chairman BoE.

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Assignment - 2

Term - 2

Instructions to students:

1. The assignment consists of **5** questions: Part A –**1** Question, Part B- **4** Questions.
2. Maximum marks is **50**.
3. The assignment has to be neatly word processed as per the prescribed format.
4. The maximum number of pages should be restricted to **20**.
5. Restrict your report for Part-A to 3 pages only.
6. Restrict your report for Part-B to a maximum of 17 pages.
7. The printed assignment must be submitted to the course leader.
8. **Submission Date:** 20/11/2017
9. **Submission after the due date is not permitted.**
10. **IMPORTANT**: It is essential that all the sources used in preparation of the assignment must be suitably referenced in the text.
11. Marks will be awarded only to the sections and subsections clearly indicated as per the problem statement/exercise/question

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Preamble

This subject is intended to prepare students to develop computer programs using algorithmic and programming constructs. It introduces the elements and methods of computer science and engineering and their applications for solving engineering computational problems. In Part-A of the assignment, students should develop a technical essay based on his understanding using available scientific literature. In Part-B of the assignment, students should analyse and write algorithms for the given problems. They should design, implement and test computer programs for the designed algorithms.

PART A **10 Marks**

Machine to Machine (M2M) refers to direct communication between devices using any communications channel, including wired and wireless. The Internet of Things (IoT) is the inter-networking of physical devices, vehicles, buildings, and other components embedded with electronics, software, sensors, actuators, and network connectivity which enable these objects to collect and exchange data. CSE department adopted M2M concept to develop Vending Machine and IT department adopted Internet of Things (IoT). CSE department feels M2M concept is benefiting and IT department feels IoT is benefiting.

In this context debate on the statement "**CSE department and IT department are equally benefited from M2M and IoT, respectively**"

Your debate should address the following:

A1.1 Introduction of IoT and M2M

A1.2 Features of IoT

A1.3 Features of M2M technology

A1.4 The stance taken with justification

PART B **40 Marks**

B1. Develop a C program to define a function that calculates the length of the hypotenuse of a right angled triangle when the other two sides are given. The function should take the length of the sides of the triangle as arguments and return the length of the hypotenuse.

Your report should contain the following:

B1.1 Introduction and Problem solving approach

B1.2 Algorithm/Flow chart

B1.3 Implementation

B1.4 Results and analysis

B1.5 Concluding remarks (Summary, limitations, improvements)

B2. Consider different parameters such as Name, Registration number, Address and Marks of students in a class that can be recorded for future use. Identify and explain which parameter can be taken as the key to search a particular student in the class. Implement a C program to check whether a student exists or not in the class based on the identified parameter. Justify which searching algorithm is suitable in this scenario and use it to implement the program. Note: Test and validate the program for at least 10 students using representative values.

Your report should contain the following:

B2.1 Introduction and Problem solving approach

B2.2 Algorithm/Flow chart

B2.3 Implementation

B2.4 Results and analysis

B2.5 Conclusion with justification of the chosen searching algorithm

B3. A **mailing list** is a collection of names and addresses used by an individual or an organization to send material to multiple recipients. Create a structure to hold the data for a mailing list such as Name, Department, Company, City and Zip Code. Identify and explain appropriate data type for each field and use it to implement the program. A C program is to be developed for the following two functions.

- Display all the data in the list
- Sort the mailing list based on any of the fields of the members in the list

Note: Test and validate the program for at least 10 members.

Your report should contain the following:

B3.1 Introduction and Problem solving approach

B3.2 Algorithm/Flow chart

B3.3 Implementation

B3.4 Results and analysis

B3.5 Concluding remarks (Summary, limitations, improvements)

B4. For the program developed in Question B3, give an option to

i. Read the structure from the terminal

ii. Write the content of the structure to a file

iii. Display the contents of the file in terminal

Your report should contain the following:

B4.1 Introduction and Problem solving approach

B4.2 Algorithm/Flow chart

B4.3 Implementation

B4.4 Results and analysis

B4.5 Concluding remarks (Summary, limitations, improvements)