

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 - 01					
Register No.		Name of Student			
Sections		Marking Scheme	Max Marks	First Examiner Marks	Second Examiner Marks
Part-A	A1.1	Need for programming in industry and academia	02		
	A1.2	Discuss the importance of C programming	02		
	A1.3	Discuss other modern programming languages	02		
	A1.4	Stance taken and justification with the support of examples	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 selected control statement	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)				
<div>Signature of First Examiner</div> <div>Signature of Second Examiner</div>				

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.

Assignment-1

Term - 1

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:** 09/10/2017
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

Preamble

This course 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

Writing a program is the most dreaded thing for most beginners as well as those who are in the field for many years. But for some, programming is fun, it just happens and they enjoy doing it. C programming is the traditional programming language and other programming languages are gaining popularity in this modern era.

Develop a debate on

“Replacing C with modern programming languages benefits industry and academia”

Your debate should address the following:

- A1.1** Need for programming in industry and academia
- A1.2** Discussion on the importance of C programming with applications
- A1.3** Discussion on other modern programming languages with applications
- A1.4** Stance taken and justification with the support of examples

PART B

40 Marks

- B1** A car accelerates uniformly from a speed of X km/hr to Y km/hr in t seconds. Identify the formula to determine the acceleration of the car and the distance covered by the car during the t seconds. Based on the formula, implement a C program to compute the following quantities – the acceleration and the distance travelled.

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 the tax automation system to calculate the income tax of the employees in an organization. There are two types of employees such as individuals with age less than 60 and senior citizens (age above 60 or more). Implement a C program to calculate the tax based on the conditions as given in the Table 1. Enter the type of the employee and annual income as input and display the tax amount that should be paid by the employee. Select the appropriate control statement to solve the problem.

Table 1

Income slab (in ₹) for individuals	Income slab (in ₹) for senior citizens	Tax Rate
Income up to 2,50,000	Income up to 3,00,000	No tax
Income from 2,50,000 to 5,00,000	Income from 3,00,000 to 5,00,000	5%
Income from 5,00,000 to 10,00,000	Income from 5,00,000 to 10,00,000	20%
Income more than 10,00,000	Income more than 10,00,000	30%

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 selected control statement

- B3.** Ramaiah University has been receiving many mails which are not relevant to the university. Mail subject contains unofficial words (strings) example question paper, salary hike, movie tickets, promotion ads etc. Identify such a string and then count the number of spam mails and display the user name. Implement a C program to develop a spam filter to help the university.

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.** Consider the online booking of movie tickets in a theatre with a capacity of 100 seats and having two types of classes – First class and Balcony. Implement a C program to assign seats in the theatre for a particular show.

Your program should display the following menu:

Enter 1 for "First class"

Enter 2 for "Balcony"

If the person types 1, then the program should assign a seat in the First class section (seats 1–60). If the person types 2, then the program should assign a seat in the Balcony section (seats 61- 100). The program should print a ticket indicating the person's seat number and whether it is in the First class or Balcony section of the theatre. The program should not assign a seat that has already been assigned and if the seats are full, it should display the corresponding message. Use a single-subscripted array to represent the seating chart of the theatre.

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)

