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| Course Title | Basics of Computer Programming |
| Course Code | CE103 |
| Course Credit | Theory :00 |
| | Practical :02 |
| | Tutorial :00 |
| | Total :02 |

Course Learning Outcomes

On the completion of the course, students will be able to:

- **Understand** fundamental concepts of programming.
- **Design** flow chart and algorithms of various fundamental concepts.
- **Design** and **implement** simple programs using basic syntax of c language such as assignment, expressions, selection and iterations.
- **Compile, execute** and **debug** the programs.

Detailed Syllabus

| Sr. No. | Name of chapter & details |
|---------|--|
| 1 | Introduction to computer and programming Program, Compiler and Interpreter, Types of Programming Languages, Flow charts and Algorithms. |
| 2 | Fundamentals of 'C' Features of C language, structure of C program, comments, header files, data types, constants and variables, operators, expressions, evaluation of expressions, type conversion, precedence and associativity, I/O functions |
| 3 | Control structures in 'C' Simple statements, Decision making statements, Looping statements, Nesting of control structures, break and continue statement, goto statement. |
| 4 | Array Concept of array, One and Two dimensional arrays, declaration and initialization of arrays, Working with arrays. |
| 5 | String String, String storage, Standard Library String Functions |
| 6 | Functions Concept of user defined functions, prototype, definition of function, parameters, parameter passing, calling a function, recursive function. |

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| 7 | Pointers Basics of pointers, working with pointer, pointer and array, pointer to array, pointer with function. |
| 8 | Structure & Union Introduction, Declaration & Initialization, Access of structure members |
| Instructional Method and Pedagogy | |
| <ul style="list-style-type: none"> • There is no theory session for this course. Focus is on “Hands on”. • During lab sessions, instructor will teach concept with examples. Students will perform some simple problems to get hold of concept. Then They will attempt problems given as part of tutorials. | |
| Reference Books | |
| <ul style="list-style-type: none"> • E Balagurusamy, Programming in ANSI C, fourth Edition, TMH Publication • Herbert Schildt , C : The complete Reference, TMH Publication • Ashok Kamthane, Programming in C, Pearson • Vikas Gupta, Computer concepts and Programming, Dream Tech • Pradip dey and Manas Ghosh, Computer fundamentals and Programming in C, Oxford | |
| Additional Resources | |
| <ul style="list-style-type: none"> • http://cquestionbank.blogspot.com • www.intelligentedu.com/ • www.hermetic.ch/cfunlib.htm. • www.cprogramming.com/ • www.c-program.com/ | |

List of Experiments

Problem-1

Mr. Khan wants to travel from Rajkot to surat , he has three options, **solve** Mr. Khan problem of **choose** best option him to find best option for him which saves his time as well as money.

1. Travel by Car speed 60 Kmph, per kilometer charges Rs. 6.5/-
2. Travel by Bus, speed 50 Kmph, Per Kilometer charges Rs. 3.5/-
3. Travel by railway, speed 70 Kmph, Per Kilometer charges Rs. 4.5/-

Problem-2

Calculate an application to produce electricity bill taking different categories of users, Different slabs in each category.

| Domestic | | Non-Domestic | |
|-----------------|------------------------|---------------------|------------------------|
| Range | Unit per charge | Range | Unit per charge |
| 0-200 | 1.5 | 0-100 | 2.5 |

| | | | |
|---------------|-----------|---------------|-----------|
| 201-400 | 200 + 2.3 | 101-200 | 100 + 3.2 |
| 401-600 | 420 + 3.8 | 201- 300 | 200 + 3.8 |
| 601 and Above | 500 + 4.2 | 301 and Above | 300 + 4.2 |

Also consider service tax 12.5% when calculate bill, print total amount.

Problem-3

ABC Pvt.Ltd. have 10 employee, their salary details are as follow:

| Sr.No. | Designation | Number of Employee | Basic | DA | HRA | IT slab |
|--------|-------------|--------------------|--------------|-----|-----|---------|
| 1. | Peon | 3 | Rs. 3,000/- | 80% | 5% | 10% |
| 2. | Clerk | 4 | Rs. 7,000/- | 80% | 5% | 10% |
| 3. | Manager | 2 | Rs. 10,000/- | 80% | 10% | 15% |
| 4. | Sr. Manager | 1 | Rs. 12,000/- | 80% | 10% | 15% |

Create Program to **calculate** gross salary and net salary of ABC Pvt. Ltd.

Problem-4

To **design and create** an application program to read student id and marks from user and **perform** the following operations:

1. Print the list
2. **Compare** and Delete duplicates from the list
3. Reverse the list

Find mean of list of student's marks by using two dimensional array.

Problem-5

Create a structure with following fields:

1. Candidate id
2. Candidate Name
3. Candidate City

Find particular candidate information using search algorithm and if found display candidate's information otherwise display the message "Element not found in the list".

Problem-6

Develop a C Program for Problem number 5 using pointer.



SYLLABUS