Uka Tarsadia University (Diwaliba Polytechnic)
Diploma in Computer Engineering/ Information Technology
Assignment (Programming in 'C' – CE1001)

Unit 1: Fundamentals of Computer and Logical Thinking

1. Define Computer.
2. Explain block diagram of computer in detail.
3. Define:

   Software

   Hardware
4. State the difference between Software and Hardware.
5. Explain different types of software.
6. State the difference between System software and Application software.
7. What is programming language?
8. Explain types of programming language in detail.
9. Define compiler and interpreter.
10. State the difference between compiler and interpreter.
11. What is algorithm? What are the advantages and disadvantages of algorithm?
12. Define flow chart. Explain the use of various symbols used to develop flow chart.
13. Write an algorithm for find minimum number from two numbers.
14. Write an algorithm for find division of two numbers.
15. Draw the flowchart for find minimum number from three numbers.
16. Write an Algorithm & draw the Flowchart to convert temperature from Celsius to Fahrenheit.

    Hint: F = (9/5 * C) + 32
17. Write an Algorithm & draw the Flowchart to find Area and Perimeter of Square.

    Hint: Square Area = l * l & Square Perimeter = 4 * l
18. Write an Algorithm & draw the Flowchart to find Area and Perimeter of Rectangle. Hint: Rectangle Area = l * b & Rectangle Perimeter = 2 * (l + b)
19. Write an Algorithm & draw the Flowchart to find given number is even or odd.

Unit 2: Basics of C (Part 1)

1. Write the importance of 'C'.
2. Explain basic structure of a C program.
3. Write down the steps to execute the C program. (Draw the figure also)
4. What is header file? Explain various header files.
5. What is a token? Explain classification of C token in detail.
6. Explain keyword and Identifiers with examples.
7. What is constants in C? List out classification of constants.
8. What is variable? Write down rules for variables. How can we declare the variables?
9. What is data type? List out data types with its size and range supported by C.
10. Explain user-defined type declaration with example.
11. Explain symbolic constants.

Unit 2: Operators and Expressions (Part 2)

1. What is operator? Enlist different types of operators.
2. Explain Arithmetic operators with example.
3. Explain Relational and Logical operators with example.
4. Explain Assignment operators with example.
5. Explain Increment Decrement operators with example.
6. Explain Conditional and Bitwise operators with example.
7. Explain the comma operator and sizeof operator.
8. What is Arithmetic expressions? Give some of the examples.
9. Explain Implicit and Explicit type conversion.
10. What is operator precedence and associativity? Write precedence and associativity of each operator supported by C.

Unit 3: Decision Making and Branching (Part 1)

1. Enlist decision-making statements.
2. Explain simple if statement with an example. (syntax (general form), flowchart, one example)
3. Explain if . . . else statement with an example.
4. Explain nested if . . . else statement with example.
5. Explain else . . . if ladder statement with example.
6. Explain switch statement with its syntax, flowchart and rules for it.
7. Write a C program to make a calculator using switch statement.
8. Write a C program using switch statement to check whether given character is vowel or not.
9. Explain conditional operator with example.
10. Explain goto statement.
11. Write a C program to for find given number is even or odd using goto statement.
12. Write a C program to find given number is even or odd using conditional operator.

Unit 3: Decision Making and Looping (Part 2)

1. Define the following:
   i. Entry Control Loop
   ii. Exit Control Loop
2. Write down the syntax of for loop.
3. Write down the syntax of while loop.
4. Write down the syntax of do…while loop.
5. Write down the syntax of nested for loop statement.
6. Write down the syntax of nested while loop statement.
7. Write down the syntax of nested do…while loop statement.
8. Enlist types of loop. Explain any one with proper example.
9. Explain for loop with an example.
10. Explain while loop with an example.
11. Explain do…while loop with an example.
12. Write a program to print 1 to 10 number using for loop.

13. Write a program to print 1 to 10 number using while loop.
14. Write a program to print 1 to 10 number using do…while loop.
15. Explain nested loop with an example.
16. Explain break and continue statement with an example.
17. Define the following terms:
    i. break statement
    ii. continue statement
18. Write a program to print following pattern:

```
*
* *
* * *
```

19. Write a program to print following pattern:

```
1
2 2
3 3 3
```

20. Write a program to print following pattern:

```
1
2 3
4 5 6
```

21. Write a program to print following pattern:

```
A
B C
D E F
```

Unit 4: Array (Part 1)

1. Define Array. What is the staring index of an array?
2. Justify need of an array.
3. Enlist types of arrays.
4. What are the advantages of an array?
5. What is multi-dimensional array?
6. Write down the syntax to declare multi-dimensional array.
7. Enlist types of arrays. Explain anyone with a suitable example.
8. How to declare and initialize 1-D array? Explain it with suitable example.
9. Explain two dimensional array with its initialization.
10. How to initialize one dimensional array at run time?
11. Write a C program to display numbers of an array at odd index only.
12. Write a program to print elements present in even indices.
13. Write a program to find addition of two matrices.
14. Write a C program to print sum of all elements of an integer array.
15. Write a C program to print odd numbers from an array.
16. Write a program to find maximum elements from a matrix.
17. Write a program to copy elements from one matrix to another matrix.

Unit 4: String (Part 2)

1. Which function is used to find the string's length?
2. Enlist the different string handling functions.
3. Enlist different input and output methods of a string.
4. Explain gets() and puts() function with an example.
5. Enlist different input and output methods of a string. Explain any one with its general form and example.
6. Enlist the different string handling functions. Explain any two with its syntax and example.
7. Explain following functions with its syntax and a suitable example.
   i. strcat()
   ii. strcmp()

8. Explain following functions with its syntax and a suitable example.
    i. strcpy()
    ii. strlen()
9. Explain following functions with its syntax.
    i. strrev()
    ii. strupr()
    iii. strncmp()
    iv. strncat()
    v. strstr()
10. Write a program to find length of a string.
11. Write a program to convert string from upper case to lower case.
12. Write a program to find whether given string is palindrome or not using string handling function.

Unit 5: Functions

1. Define function. Write down the general form of the function definition.
2. Enlist the elements of user defined function.
3. What are the types of arguments in functions?
4. Define the following terms:
   i. Actual arguments
   ii. Formal arguments
5. Enlist categories of functions. Explain anyone with an example.
6. Explain Call by Value with an example.
7. Explain nesting of function with an example.
8. Explain any two categories of function with suitable example.
9. Enlist elements of user defined functions. Explain them in detail.
10. Define: recursion. Explain it with suitable example.
11. Write down the general format of function definition. Explain it with suitable example.
12. Explain function call with an example.
13. Write a program for any function which has arguments and return value.
14. Write down the syntax of function declaration. Explain it with an example.
15. Write a C program to find the factorial of any number using function.
16. Write a C program to describe recursion.
17. Write a C program to find sum and multiplication of two numbers using user-defined function.
18. Write a C program to find minimum number out of two numbers using user defined function.
19. Write a C program to find maximum number out of two numbers using user defined function.
20. Write a program to check whether the character is alphabet or not using user defined function.
21. Design calculator using user defined function.
22. Write a program to find last digit of a given number using user defined function.

Unit 6: Structure and Union (Part 1)

1. Write the general form of a structure definition.
2. Differentiate structure and union.
3. How to declare a union? Write down the syntax of it.
4. Write down syntax of structure data type.
5. Define a structure data type called mobile phone containing model and price. Write a C program to read data of 5 mobile phones and display it.
6. Define a structure of customer that would contain customer name, address and amount of bill. Using this structure write a C program to read information of two customers and display on screen.
7. Define a structure data type called student containing id, name and total marks. Write a C program to read data of a student and display it.
8. Explain the concept of structure initialization.
9. Explain the concept of union with suitable example.
10. Explain array of structure with an example.
11. Explain the concept of 'array within structures' with suitable example.
12. Explain memory allocation in union with an example.

Unit 6: Pointer (Part 2)

1. Describe indirection operator.
2. Describe Address of operator.
3. What is pointer? How to declare the pointer variable?
4. What is the role of "*"operator in pointer?
5. Write a program to swap values of two variables using pointer.
6. Write a program to perform addition of two numbers using pointer.
7. Write a C program to perform arithmetic operation in pointer.
8. Enlist two arithmetic operations that can be used on pointers.
9. Explain chain of pointer in C.
10. Define pointer. Explain how pointers are declared and initialized.