

ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
(Department of Computer Science)

WARNING

- 1. PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
- 2. SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

ASSIGNMENT No. 1

(Units: 1–4)

Course: Programming Concepts (3402)
Level: BS (CS)

Semester: Spring, 2013
Total Marks: 100
Pass Marks: 50

Note: All questions are compulsory. Each question carries equal marks.

- Q. 1 Explain the difference between the following:
- (a) Editor and the Compiler
 - (b) Source program and the object program
- Q. 2 (a) How can you use pseudo code and flow charts to solve different problems related to programming? Explain.
- (b) Explain the purpose and advantages of using comments in C/C++ Language.
- Q. 3 (a) Write a simple program in C/C++ demonstrating the functions of relational operators.
- (b) Differentiate between syntax errors and logical errors.
- Q. 4 (a) Differentiate between Input and Output in C/C++ language. Which libraries and keywords are required for Input and Output in a C/C++ program?
- (b) Write a simple program in C/C++ demonstrating the functions of assignment and logical operators.
- Q. 5 (a) Write a program in C/C++ using nested if statement for calculating the average marks and grades of 5 subjects.
- (b) Write a program in C/C++ using switch statement for calculating the average marks and grades of 5 subjects.

ASSIGNMENT No. 2

(Units: 5–8)

Total Marks: 100

Pass Marks: 50

- Q. 1 (a) Write a program that prints the cubes of all the numbers from 1 to 20.
(b) What is the difference in execution sequence of the body of a do-while loop and a while loop? Explain with examples.
- Q. 2 (a) What is the difference between break and continue statements? Explain with the help of suitable example.
(b) For what purpose functions are used? Explain the structure of functions with the help of an example.
- Q. 3 (a) What are pre-processor directives? Explain the concept of header files.
(b) What are the main differences between functions and macros? Explain.
- Q. 4 (a) How single dimensional, two-dimensional, and three-dimensional arrays are initialized?
(b) How searching operation can be performed on arrays? Explain the searching operation by using sequential search.
- Q. 5 (a) What is a pointer? Why are pointers used? What is an indirection operator?
(b) Write a program using pointer notation to access individual elements of an array and print the average of the elements of the array.

3402 Programming Concepts

Credit Hours: 4 (3+1)

Recommended Book:

The Wait Group's Turbo C Programming for the PC and Turbo C++ by Robert Lafore

Objectives: This course primarily aims at developing key elementary concepts in computer programming. The objectives of the course are to explain (Foundation of computer programming, elements of computer programming, development of structured computer programs, learning of programming language C to implement structured computer programming)

Course Outlines:

Unit No. 1 Introduction to Computer Program

Computer Program concepts, High Level Languages, 4GL, Editor, Compiler, Source Program, Object Program

Activities: The students shall be demonstrated various high level languages, 4GL, editors, compilers, source programs, and object programs

Unit No. 2 Computer Program Engineering

Introduction, Problem Solving Techniques (pseudo code, flowchart), Qualities of Good Program, Program Life Cycle

Activities: The students shall be given simple daily life problems for developing pseudo code and program flowcharts

Unit No. 3 C Building Block

Constant, Variable, Data Types, Operators, Expression, C Program Structure, Input and " Output, Debugging Procedures, Errors (Logical, Syntax)

Activities: The students shall be given simple daily life problems and use computer laboratory to demonstrate (Constant, Variable, Expression building, Developing simple C programs, Compiling, running, and debugging C programs)

Unit No. 4 Decision Making

Simple Decision (if, if/else), Complex Decision (Switch Structure, Nested Decisions)

Activities: The students shall be given daily life problems and use computer laboratory to demonstrate (if, if/else, Nested Decisions, Switch Structure)

Unit No. 5 Loops

For, while, do/while

Activities: The students shall be given daily life problems and use computer laboratory to demonstrate (for, while, do/while)

Unit No. 6 Functions

Function concept, A Simple function program, Function with value return, Function with arguments, Recursion

Activities: The students shall be given daily life problems and use computer laboratory to demonstrate (Simple function program, Function with value return, Function with arguments, Recursion)

Unit No. 7 Arrays & Strings

Introduction, Single and Multidimensional, Organizing Array Elements, Strings Introduction, String Constant, String Variable, String I/O functions (gets() and puts()), An array of String

Activities: The students shall be given daily life problems and use computer laboratory to demonstrate (Single and Multidimensional, Organizing Array Elements, String Constant, String Variable, String I/O functions (gets() and puts()), An array of String

Unit No. 8 Pointers

Overview, Pointer Types, Pointers & arrays, Double indirection

Activities: The students shall be given daily life problems and use computer laboratory to demonstrate (Pointer implementation, Pointers & arrays implementation, Double indirection)

Unit No. 9 Structures

Introduction, Declaring a structure, Accessing structure elements, Entering data into structures, Initializing structures, Array of structures

Activities: The students shall be given daily life problems and use computer laboratory to demonstrate (Structure implementation, Accessing structure elements, Entering data into structures, Initializing structures, Using an array of structures)

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