Programming in C guideline

Week wise activities

Week	Contents and Activities	Session1 (Demonstration by Instructor)	Session2 (Assignment to Students and Evaluation)
(1) 22-28 Aug	Programming (Editing, Compiling, Debugging) Data type, Operator, Expression, Console I/O (Printf, Scanf) Branching and Switching *Online Resources* 1. http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical-programming-in-c-january-iap-2010/lecture-notes/MIT6_087IAP10_lec01.pdf 2. http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical-programming-in-c-january-iap-2010/lecture-notes/MIT6_087IAP10_lec02.pdf 3. https://www.youtube.com/watch?v=3QiItmIWmOM 4. https://www.youtube.com/playlist?list=PLRdux5uhMFiepKgD56YNFlNvz2j3YRlqr 5. http://www.geeksforgeeks.org/c/ *IIIT Video Lecture* 1. Introduction *Others*	1. Swapping of two numbers 2. roots of a quadratic equation 3. print the ASCII value of a given alphabet 4. biggest of 3 numbers using if...else 5. change an integer to words 6. arithmetic operations using switch...case	1. To convert temperature in centigrade to Fahrenheit 2. To find the sum of individual digits of a three digit integer. 3. Program to find the day of the given date 4. To check whether a given year is leap year (or) not 5. To measure the time taken for execution of five floating point multiplications.(hints: use the library function gettimeofday)

(2) 29-4 Sep	Looping *Online Resources* 1. https://www.youtube.com/watch?v=atfNaIY9WbQ 2. https://www.youtube.com/playlist?list=PLRdux5uhMFiepKgD56YNFlNvz2j3YRlqr 3. http://www.geeksforgeeks.org/c/ *IIIT Video Lecture* To be given *Others*	1. To find the average of first n natural numbers 2. To count the number of digits in an integer 3. To check whether a given no. is prime (or) not 4. Program to reverse an integer 5. Program to calculate the value of exp(x) 6. write C programs to print the following formats see fig 1	1. Program to print the multiplication table 2. Program to find the sum of Fibonacci series 3. To print all the divisors of a given number 4. Program to calculate the cosine series (cos(x)) 5. Program to calculate the sine series (sin(x)) 6. write C programs to print the following formats see fig 2
(3) 5-11 Sep	Function *Online Resources* 1. https://www.youtube.com/playlist?list=PLRdux5uhMFiepKgD56YNFlNvz2j3YRlqr 2. http://www.geeksforgeeks.org/c/ *IIIT Video Lecture* To be given *Others* *Start exercise* *30 Days of Code Challenges* *https://www.hackerrank.com/domains/tutorials/30-days-of-code*	1. Program to find the factorial of a given number 2. Program to find LCM and GCD of the given two numbers 3. To convert a decimal number to a binary number 4. Find the root of a equation using Bisection method	1. Find the root of a equation using Newton Raphson method 2. Find the no. of terms in power series of exp(x) required to get an accuracy 0.0001.
(4) 12-18 Sep	Reserve *Online Resources* 1. https://www.youtube.com/playlist?list=PLRdux5uhMFiepKgD56YNFlNvz2j3YRlqr *IIIT Video Lecture* To be given *Others* *Check Progress* *30 Days of Code Challenges*		

(5) 19-25 Sep	Array *Online Resources* 1. https://www.youtube.com/playlist?list=PLRdux5uhMFiepKgD56YNFlNvz2j3YRlqr *IIIT Video Lecture* To be given *Others* *Check Progress* *30 Days of Code Challenges*	1. Program to read and reverse an array 2. Solution of simultaneous equation using gauss elimination method 3. Program to generate Floyd's triangle 4. To find sum of all the elements of the given matrix 5. Program to add the given two matrices 6. Program to multiply the given two matrices 7. Program to find the length of the given string 8. Program to reverse the given string	1. Program to generate Pascal's triangle 2. Program to generate magic square 3. Find sum of diagonal elements of the given matrix 4. Find smallest & biggest elements of the given matrix 5. Program to concatenate the given two strings 6. To check the given string is palindrome (or) not 7. Write a C program to search a number from a set of integers stored in an array. If the number is present then print the position of the integer in array. Allow multiple entries of the same number.
(6) 26-2 Oct	Pointer *Online Resources* 1. https://www.youtube.com/playlist?list=PLRdux5uhMFiepKgD56YNFlNvz2j3YRlqr *IIIT Video Lecture* To be given *Others* *Check Progress* *30 Days of Code Challenges*	1. Swap two numbers using swap function 2. To find the length of the string using pointers 3. To copy one string to another using pointers 4. Concatenate the given two strings using pointers 5. To compare the given two string using pointers	1. Write a C program to determine if the given string is a palindrome or not 2. To insert a substring in to given main string from a given position. 3. To delete n Characters from a given position in a given string.
(7) 3-9 Oct	Mid Semester Examination		
(8)	Dussehra Vacation		

10-16 Oct			
(9) 17-23 Oct	Structure and File *Online Resources* 1. https://www.youtube.com/playlist?list=PLRdux5uhMFiepKgD56YNFlNvz2j3YRlqr *IIIT Video Lecture* To be given *Others*	1. Program to maintain student details using structures 2. Program to write and read data from a file 3. Program to maintain student details using files 4. Program to merge the contents of two files	1. Program to maintain employee details using structures 2. Write a C program that uses functions to perform the following operations: Read a complex number, Print a complex number, Add two complex numbers, Multiply two complex numbers (Note: Represent complex number using a structure.) 3. Read integers and store odd & even no. in a file 4. Program to maintain employee details using files 5. Program to encrypt and decrypt a file 6. Write a C program to read a sequence of positive integers (data stream) from a file. It prints the count (frequency) of different odd digits present in the data stream. The number of integers in the data stream is not known prior to the user. 7. Write an C program to concatenate two files : that is, append the content of one file at the end of

			another and write the result into a third file
(10) 24-30 Oct	Project Allocation (3 Members in a group) Refer to Project Ideas		
(11) 31-6 Nov	Project Progress		
(12) 7-13 Nov	Project Progress		
(13) 14-20 Nov	Project Submission & Evaluation		
(14) 21-27 Nov	Questions & Answers		
(15) 28-4 Dec	No Class		
(16) 5 Dec	End Semester Examination		

Figures

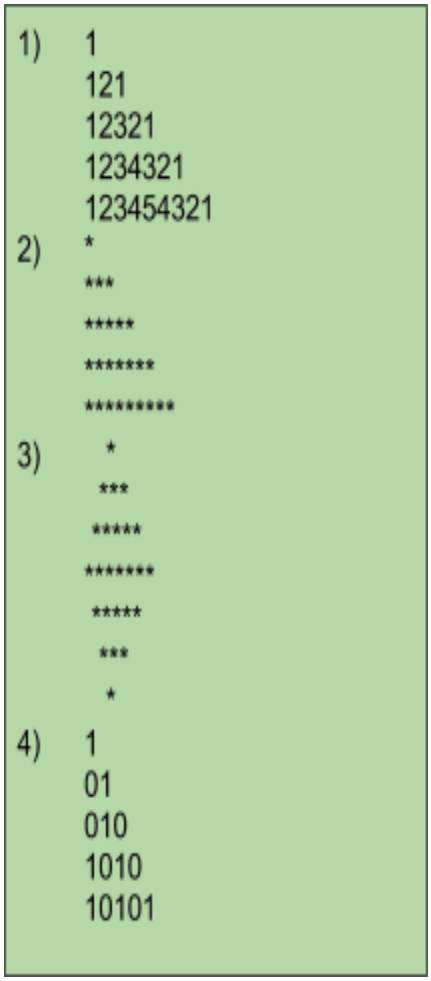

Figure 1

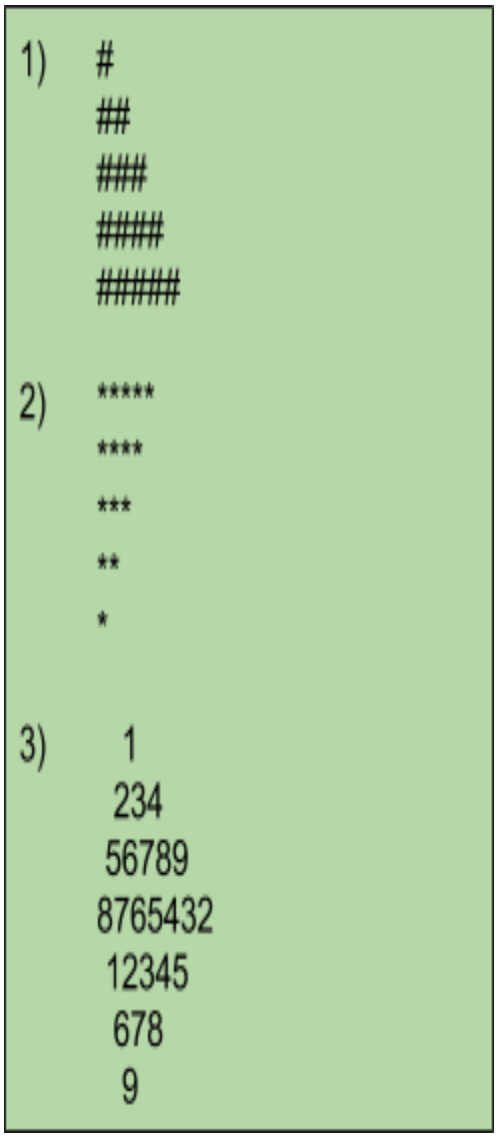

Figure 2

List of Books

Text Books:

1. Programming in ANSI C (2009), E Balagurusamy, Tata McGraw Hill.
2. Programming with C (2009), B. S. Gottfried, J. K. Chhabra, Schaum's Outline Series, Tata McGraw Hill.

Reference Books:

1. The C Programming Language (2nd Ed.), B. W. Kernighan, D. Ritchie, PHI.
2. Let Us C, Y. Kanetkar, BPB Publisher.

Project Ideas

1) Static Code Checker for C

To help coders in general and fellow college students in particular, building a tool which can run static code checks on a given C code can help improve the quality of code to a great extend.

Features: Static code checker can check and warn the programmer about best practices, possible mistakes, loopholes without even executing the code. For example.

- Memory leaks
- Unused variables
- Undeclared variables
- Array's bound checks
- Dead code

Implementation: Static code checker could be written as a plugin to any existing IDE like Eclipse/Codeblocks (recommended) or it can be in the form of any website where you paste your code and run static code checks.

References: There are a lot of existing static code checkers available. For example the best static code checkers available for Javascript are JsLint and JsHint.

http://www.jslint.com/

http://jshint.com/

2)

REFERENCES

1. http://www.geeksforgeeks.org/project-idea-static-code-checker-for-c/
2.