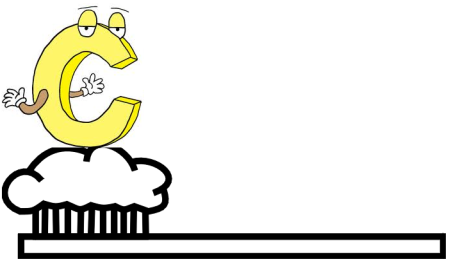
**Brush-up training**

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**History**

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Author | Date | Comments |
| 1.0 | Kavan & HK | 11-Dec-2012 | First version |
|  |  |  |  |

# Objective

* Brush up the fundamentals of C Programming:
  + C language syntax, keywords, loops, conditional statements, control flow
  + Types (Its size, range etc), Operators(Precedence) and Expressions(Evaluation patterns)
  + Various usage of functions
  + Arrays, Structures, Unions
  + Input and Output operations
  + Pointers, function pointers (Pointer fundamentals needs to be excellent)
* Learn library fundamentals
  + Compilation stages
  + Static and dynamic libraries
  + Library usage in application
  + Use of ‘make’ file
* At the end of training, trainee should be able to independently code in C language, create static and dynamic libraries

# Total Duration:

* 26 working days

# Total Points:

* Points can be earned from exercise set#1 to 5: 160
* Bonus points can be earned: 40
* Minimum point to be earn: 110

# Instructions:

* Use Linux OS(Ubuntu 10.04 LTS) for development of all exercises
* Use vim, emacs or similar type of editor
* Use GCC compiler for code compilation with “-Wall” option & “-o” option
* Every exercise must be developed in separate file
* Every exercise should have problem-statement written at the starting of the file
* Every code compilation should not have any error or warning
* Code must be written with good comments and indentation

# Evaluation criteria

* All exercises need to be completed within defined duration. If exercises are completed then only evaluation can be done.
* Every exercise in set 1 to 3 should produce result as specified in problem statement
* Trainee must be able to explain each exercise.
* This exercise provides opportunity of scoring maximum 200 points on successful completion of training. Trainee has to earn minimum 110 points. If trainee doesn’t get minimum 110 points then he/she is not qualify for next training.
* If it is found that the code/design is copied from somewhere, then 50 points will be deducted.
* If trainee completes training before time, then there will be bonus of 10 points.

**List of Exercises**

## Point earning criteria for exercise set 1 to 3

* Reviewer will choose 5 exercises randomly from each set (1 to 3).
  + 2 point on successful completion of exercise (as per evaluation criteria)
  + 3 point for the explanation and answer of the questions asked by reviewer.
* If trainee completes all exercise of chapter 8, then he/she can earn 10 bonus points.

## Exercise Set#1

* Read chapter 1, 2 and 3 from book “The C programming Language K &R”
* Develop code for every exercise mentioned in chapter 1, 2 and 3
* Duration: 5 days
* Points earn: 25

## Exercise Set#2

* Read chapter 4 and 5 from book “The C programming Language K &R”
* Develop code for every exercise mentioned in chapter 4 and 5
* Duration: 5 days
* Points earn: 25

## Exercise Set#3

* Read chapter 6 and 7 from book “The C programming Language K &R”
* Develop code for every exercise mentioned in chapter 6 and 7
* Duration: 5 days
* Points earn: 25

## Exercise Set#4

* + Read “library fundamental” from provided materials.
  + Implement exercise provided in material.
  + Points earned: 10
  + Duration: 1 day

## Exercise Set#5

* + Total Duration: 10 days
  + Total Points earn: 75
  + For compiling library and application use Make
  + Develop a dynamic library in “C” to provide following functionalities of Singly Linked List
    - Addition of nodes: At first, At last, At intermediate
    - Deletion of nodes: At first, At last, At intermediate
    - Traversing of nodes
    - Replacing of nodes: At first, At last, At intermediate
    - Printing of nodes: All, Reverse, Up-till given node
    - Searching of nodes
    - NOTE: Library should work with any type of data structure
    - Point can be earned: 30
  + Develop “tele book” application in C by using Linked list library developed earlier. Application should provide following feature.
    - A run-time database of Telephone connection. (Database needs not to be persistent)
    - This database should contain following fields: Name, Unique ID, Password, Address line 1, Address line 2, Area, City, State, Pin-Code, Telephone no:1, Telephone no:2, Telephone no:3.
    - Application should be able to add, modify, query and delete subscribers.
    - For every record, except "Telephone no 2" and "Telephone no 3" each field are mandatory.
    - On successful creation, Unique Subscriber ID should be generated. For any subsequent operations user has to provide id and password.
    - Point can be earned: 30
  + Deliverables
    - Requirement document of library + application: 1 day [5 + 5 points]
    - Design document of library + application: 2 day [10 + 10 points]
    - Implementation of library: 3 day [15 points]
    - Implementation of application: 3 day [15 points]
    - Testcase document: 0.5 day [10 points]
    - Testing of application: 0.5 day [5 points]

(NOTE: Code development will be start after submission of requirement and design document)

* + Additional 10 points will be awarded, if library and application provides run-time mechanism of enabling/disabling of logs and debug message
  + Addition 10 points will be awarded, if there isn’t any memory leaks in your library and application (Hint: You can use valgrind tools to check your memory leaks)