Indian Institute of Technology, Kharagpur

Department of Computer Science and Engineering

Assignments 4, 5, and 6: Software Engineering (CS 29006), Spring 2015-16

Assignment Out Date: 10-Mar-2016 **Submission Deadline:** As shown below

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Important Instructions:

You are required to submit the documents and complete the implementation for the single problem that has been assigned to you and your partner later in this document. However, you should browse and brood over the entire problem set for your practice. Practice is very important to learning the software engineering skills pertaining to requirements specification, design, testing, etc. Only reading the theory cannot make you a good software developer.

While doing the problem assigned to you kindly note the following:

- The assignments are to be done in groups as assigned. Partners in a group are expected to contribute equally and hence will get equal credit unless there is documented evidence for unequal contribution.
- You may use BoUML software to create the UML diagrams. The access to the software is available from Mr. Shibabroto Banerjee shibabroto@gmail.com of the lab. Alternatively, you can use any other open-source software.
- All assignments in this set should be coded in C++ or Java or Python on Linux or Windows platform. A combination of languages (and specific subsidiary languages for specific sub-systems like Javascript for webpage, SQL for database) may also be used. You should choose the language/s and platform based on the system you are implementing and justify the choice.
- Assignment problems with small modifications may be set in the quiz. If any student has done an assignment problem, but answers related questions incorrectly in the test, then her / his entire mark for the assignment will be reduced to zero.
- Copying of assignments is considered serious offense. Both the person copying and the one supplying the copied material will be penalized.
- The last dates for submission would be as follows:

Assignment	Assignment Coverage	Marks (200)	Deadline
Assignment 4	SRS, SA/SD Document and UML-based Design	20+20+40 = 80	23-03-2016 (Wednesday), 23:55 hrs
Assignment 5	Implementation & Demonstration	80	06-04-2016 (Wednesday), 23:55 hrs
Assignment 6	Test Suite Design Document and Test Results	40	13-04-2016 (Wednesday), 23:55 hrs

- Late submissions would be penalized by 10% for the first three days' of delay and by 25% thereafter.

Tips for solution:

- If you cannot solve a problem, solve a simpler problem (by omitting some of the functionalities, details, etc.).
- Now, add some of the functionalities you had omitted and see if you can solve this new problem. It may not always be possible to incrementally incorporate new functionalities into the simpler solution without any alterations to the solution already worked out. You might even have to rework (or drastically modify) your simpler solution to accommodate a new functionality.
- Surely, it is more laborious to carry out incremental solutions than solving the full problem in one shot. But, it often works, and gives you new insights into the problem.

What is your Problem?

The assignment is to be done in groups of two. So decide on your partner and update the information on the Google sheet at:

`https://docs.google.com/spreadsheets/d/1jl49yytOzCzaEXVxklmhopIjtlNJeL1STwvPbcNptoQ/edit?usp=sharing`

Please note that you will need to update the *Partner Roll* for yourself as well as for your partner.

Once the groups have been formed, the TA will assign you a Group No. Since there are 124 students, 62 groups will get formed. Lookup the *Allotment of Problems to Groups and Allocation of TAs* table against your Group No. to get the problem and the TA. Once you have got the Problem scroll down to find the requirement specifications of the Problem. Get going.

The TA will not change across Assignments as they are assigned to problems.

Allotment of Problems to Groups and Allocation of TAs

Problem #	**Problem Title**	**TA**	**Code**	**Group**	**Group**	**Group**
1	Airline Management System (AMS)	SK	AMS	1	22	43
2	Swimming Pool Management Software (SPMS)	AP	SPMS	2	23	44
3	On-line Sales Portal (OSP)	SR	OSP	3	24	45
4	Graphics Editor Software (GES)	KS	GES	4	25	46
5	Motor Part Shop Software (MPSS)	AS	TMS	5	26	47
6	NGO Management System (NMS)	VP	NMS	6	27	48
7	Travel in Good Health Management (TGHM) System	TM	TGHM	7	28	49
8	Road Repair and Tracking Software (RRTS)	SK	RRTS	8	29	50
9	Judiciary Information System Software (JISS)	AP	JISS	9	30	51
10	Library Information System (LIS)	SR	LIS	10	31	52
11	Transport Company Computerization Software (TCCS)	KS	TCCS	11	32	53
12	Supermarket Automation Software (SAS)	AS	SAS	12	33	54
13	Book-shop Automation Software (BAS)	VP	BAS	13	34	55
14	Computer Aided Software Engineering (CASE) Tool	TM	CASE	14	35	56
15	Newspaper Agency Automation Software (NAAS)	SK	NAAS	15	36	57
16	University Department Information System (UDIS)	AP	UDIS	16	37	58
17	Students' Auditorium Management Software (SAMS)	SR	SAMS	17	38	59
18	Factory Service Simulation Software (FSSS)	KS	TAAS	18	39	60
19	Hall Management Software (HMS)	AS	HMS	19	40	61
20	Medicine Shop Automation Software (MSA)	VP	MSA	20	41	62
21	Travel Agency Automation Software (TAAS)	TM	TAAS	21	42	

TAs

Sl. No.	Code	Name	Email 1	Email 2
1.	SK	Sachin Kumar	kumar.sachin52@gmail.com	sachin.kumar@cse.iitkgp.ernet.in
2.	AP	Abhishek Pant	daballerap93@gmail.com	
3.	SR	Sidharth Rakesh	sid.rakesh@gmail.com	
4.	KS	Kumar Saurav	kumarsaurav020@gmail.com	kumarsaurav@iitkgp.ac.in
5.	AS	Arpit Saxena	arpit.tarang@gmail.com	arpitt.saxena@cse.iitkgp.ernet.in
6.	VP	Vikas Patidar	vikaspatidar859@gmail.com	
7.	TM	Tanwi Mallik	tanwimallick@gmail.com	

13. **Book-shop Automation Software (BAS):**

We need to develop a software for automating various activities of a small book shop. From a discussion with the owner of the book shop, the following user requirements have been arrived at:

BAS should help the customers query whether a book is in stock. The users can query the availability of a book either by using the book title or by using the name of the author. If the book is not currently being sold by the book-shop, then the customer is asked to enter full details of the book for procurement of the book in future. If a book is in stock, the exact number of copies available and the rack number in which the book is located should be displayed. If a book is not in stock, the query for the book is used to increment a request field for the book. The manager can periodically view the request field of the books to arrive at a rough estimate regarding the current demand for different books. BAS should maintain the price of various books. As soon as a customer selects a book for purchase, the sales clerk would enter the ISBN number of the book. BAS should update the stock, and generate the sales receipt for the book. BAS should allow employees to update the inventory whenever new supply arrives. Also upon request, BAS should generate sales statistics (viz., book name, publisher, ISBN number, number of copies sold, and the sales revenue) for any period. The sales statistics will help the owner to know the exact business done over any period of time and also to determine inventory level required for various books. The inventory level required for a book is equal to the number of copies of the book sold over a period of two weeks multiplied by the average number of days it takes to procure the book. For every book, depending on the publisher of the book, the shop needs to maintain the details of a stockist (vendor) of the book. Every day the book shop owner would give a command for the BAS to print the books which have fallen below the threshold and the number of copies to be procured along with the full address of the stockist.