1. Introduction

The course titled "Project work" bearing the subject code MCA 6020 is of 16 credits.

The basic aim of Master of Computer Applications (MCA) program is to prepare the students as Programmers, Systems Analysts, Systems Designers etc. in the field related to computer science and information technology. Students can also aspire to go for higher studies in this area.

The project work is part of the MCA program will give an opportunity for the students a hands on experience in developing quality software applications. During the development of the project a student should involve himself in all the stages of the software development life cycle (SDLC) like requirements analysis, systems design, software development/coding, testing and documentation, with an overall emphasis on the development of reliable software systems.

The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices, and develops good understanding of SDLC.

The MCA students are encouraged to involve themselves completely on the project work in their final semester. It is advised to students to develop their project for solving problems of software industry or any research organization. Doing this will give more exposure to handle real life problems of project development.

Students should take this project work very seriously. Topics selected, should be appropriate enough to justify as a MCA project. The project should be genuine and original in nature and should not be copied from anywhere else.

2. Project Work - Roles and Responsibilities

2.1 Project Guide

The role of a project guide is highly significant in getting a quality output from the students. As a project guide your expertise in the subject domain, counselling, monitoring and evaluating is sought.

Qualification of a Guide:

- A Post Graduate in IT with specialization in appropriate area.
- The guide should have a minimum of 5 years of Industry/Teaching experience.
- At a given session a guide can supervise a maximum of 20 projects.

Project Guideship Approval from the University

(Qualified persons desirous of guiding projects)

- Directly apply to the SMU-DE, in the prescribed format available on the university web site / EduNxt Portal (see Annexure II)
- Guide CV along with a photocopy of the credentials is a must for approval as a Project Guide with the University.
- A guide can fill in the prescribed format when approached by a prospective project student who is expected to forward the same to the University.
- Please note that you will become an eligible guide only on approval by the Project Steering Committee of the University.

Role of a Guide:

- As a guide you are expected to offer suggestions to fine tune the problem identified and in synopsis preparation. The problem identified should be sufficient enough for a study at MCA level.
- The guide has to monitor and review the project work periodically with a minimum two reviews during the course of the project.
- The guide has to go through the draft project report and offer suggestions wherever necessary and to confirm that the project report is submitted as per the prescribed format.
- Attached the Project Review report along with the Final Project Report. (see Annexure III)

Meeting with the Project Guide

- The Student is required to meet and discuss with the guide periodically on mutually agreed dates.
- The Student is also advised to maintain email contact with the guide.
- Any Conflict of interest during the course of the project is to be immediately brought to the notice of the Project Steering Committee of the University.

2.2 Project Steering Committee

To directly monitor and track projects, a Project Steering Committee is set up at the University. The functions of this committee include:

- To coordinate and track all project related activities.
- To approve the supervisor after ensuring that the supervisor has the requisite qualifications and experience.
- Approve the project synopsis submitted by the student and conveying the same to the student through E-mail and EduNxt portal.
- During the project synopsis approval process the Committee may give suggestions for improvement.
- Synopsis approved to be evaluated for award of IA marks.
- All Correspondence regarding projects should be addressed to <u>projects.it@smudde.edu.in</u> (please mark subject as MCA Project – Request for).

3. Project Work - Phases

Project work will consist of two phases. Phase – 1: Project Synopsis and Guide Approval, Phase – 2: Project Design and Development. (Refer Figure 1)

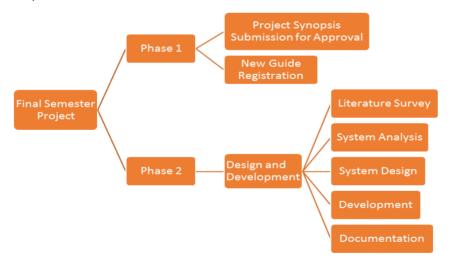


Figure 1: Project Work Phases

3.1 Phase – 1: Project Synopsis and Guide Approval Project Synopsis Submission for Approval

The student needs to submit the project synopsis for approval through EduNxt portal. The project synopsis should be prepared in consultation with your guide. The template given in Annexure-I (also downloadable from EduNxt) is to be used. Your guide should approve the project Synopsis. The project synopsis should contain the clear statement about the project statement, the resource requirements of the proposed project where it would be suitable and along with the Guide Acceptance letter. Project Synopsis may be disqualified if it is prepared without the Guide's Signature. Refer to figure-2 for details of the activities involved in this stage.

New Guide Registration

The Guide (supervisor) to be identified by the student and need to be registered with SMU-DE in the prescribed format given in Annexure-II (also downloadable from EduNxt). This is a one time process. The guide details and his/her credentials to be forwarded along with the project synopsis by the student to the project steering committee for New Guide Registration. Refer to figure-3 for details of the activities involved in this stage.

All submitted Project synopsis will be processed by the project steering committee. Status of synopsis information (Submission Acknowledgement/ Approved/Rejected) will be informed to the student and Guide through email and EduNxt portal. Once approved, the student can proceed to phase 2 or, the student needs to work on the project synopsis for resubmission, in accordance with the reason specified on the mail for rejection. The deadlines for Project synopsis submission / Guide Registration for your session, please visit EduNxt portal or university website.

Student Project Title. Synopsis and Guide Registration (Guide needs to be identified and need to get the Guide Registered) Log on to EduNxt portal using student credentials and of Student go to project course title. Modify Synopsis as per Write the synopsis (Template Available in **PSC** EduNxt Login) with Guide suggestions suggestions/pro Role vide necessary explanation Upload the signed copy of scanned synopsis and Guide Acceptance form along with New Guide registration form for Approval by the Project Steering Committee (PSC) Not Approved Approved **PSC Approval** Appropriate Communication sent to Appropriate Communication the Student (Mail / SMS) with sent to the Student (Mail / suggestions for Improvement (if any) SMS) with reasons for re-Role of PSC submission: Needs to be resubmitted for IA marks will be published on EduNxt approval-Possible Reasons portal. Any discrepancies should be for re-submission. brought to the notice of PSC within Change in Title weeks' times from the date of 2. Approval of Guide publication. Awaited 3. Additional explanation needed Final synopsis approved list will be Scope of the work needs published on EduNxt. The approved list to be enhanced of project synopsis with IA marks eligible to submit project and appear for Others University Viva-voce examination to be communicated to COE Office.

Phase - 1 Project Synopsis Submission for Approval.

Figure 2: Phase-1: Project Synopsis preparation and submission for approval

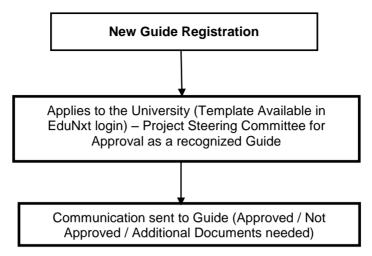


Figure 3: Phase - 1: New Guide Registration

3.2 Phase – 2: Project Design and Development

Project Development includes Literature survey, System Analysis, Design, Development and Documentation. Refer to figure 4 for details of the activities involved in this Phase.

Literature Survey:

This stage includes the literature related to the chosen project title. It includes the study of existing methodologies, conduct survey and prepare an abstract for a proposed system.

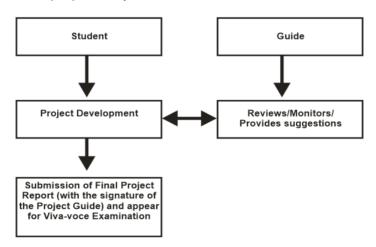


Figure 4: Phase - 2: Project Design and Development

System Analysis:

This stage includes defining the system environment required to implement the chosen project, Systems Requirements Specification (SRS) and software specification. In SRS, you must specify

- Project planning and project scheduling Data integrity and constraints.
- Indicate the technology used and substantiate it with brief explanations.

System Design:

This includes

- Modularization details (Students must strictly implement the various stages of software development).
- Implement the various activities that are performed during the Requirements phase and support it with proper outputs and the necessary graphical representations like Data Flow Diagrams D.F.D, E-R diagrams, Flow charts. (Database design/Procedural Design/Object Oriented Design/input and output Design).
- Properly document the detailed design specifications and methods adopted during Design phase.

Development:

This stage involve actual development of the software:

- Perform coding of the project with the software used. This will include
 - (i) Complete Project Coding (ii) Comments and Description
 - (iii) Standardization of the coding/Code Efficiency (iv) Error handling
 - (v) Parameters calling/passing (vi) Validation checks.
- Debugging and Code improvement.

Documentation:

On completion of the project Development, the student has to prepare the final project report. The entire project work is to be documented as the Project Report. The guidelines for project report preparation is given in section 5 of this document.

4. Broad Areas for Project Work

There is no compulsion on choosing the project and the software language for the project. Table 1 shows some of the lists of tools and environment that can be used for project work.

Table 1: List of Tool

Visual Basic, Power Builder, X-Windows (X/lib, X/motif, X/Intrinsic), Oracle Developer 2000,VC++, Jbuilder
Oracle, Ingres, Sybase, Progress, SQL Plus, Versant, MY SQL, SQL Server, DB2 , SQLite
C, C++, Java, VC++, C#
PERL, SHELL Scripts(Unix), TcL/TK
COM/DCOM, Active-X, EJB, Rational Rose, MSMQ, BEA, Message Q, MTS, CICS
Device Drivers, Pipes, RPC, Threads, Sockets, Kernel
CORBA, TUXEDO
DHTML, Java script, VB Script, Perl & CGI script, HTML, Java, Active X, RMI, CORBA, SWING, JSP, ASP, XML, EJB, Java Beans, Java Servlets, Visual Age for JAVA, UML, VRML, WML, iPlanet, ATG, BigTalk, CSS, XSL, Oracle ASP server, VB.Net, AWT, J2EE, LDAP, ColdFusion, PHP etc.
TCP/IP, SNMP, GSM, VoIP, PPP, IP-PSTN, SONET/SDH
Zigbee, Blue Tooth, 3G, ISDN, EDGE ,WSN, MANET, Wi-Fi, Wi-Max
QNX, RTLINUX, OSEK, DSP, VRTX, RTXC, Nucleus , Vxworks
ANDROID, iOS, WINDOWS OS, UNIX, LINUX, IRIX, SUN SOLARIS, HP/UX, PSOS, VxWorks, AS400, AIX, WINDOWS XP, DOS

Note: Projects should not be developed using the packages like Dbase, FoxPro, Visual FoxPro. Also, projects should not be developed using the combination of Visual Basic as the front end and MS-Access as the back end.

An indicative list of project areas in which a student can do this project work are:

- Client-Serversoftware:(Banking application, Railway, University application to name a few).
- WEB applications (Portals, Web services, E-commerce sites, Social Networking applications, Blog Engines to name a few).

- Gaming software/Virus/Antivirus software/Audio-Video Players/ Language Tutors system/application software.
- Computer Networking Projects based on various protocols (TCP/IP Internals/Routing protocols/Socket Programming/Implementation of Switches & Routers/Computer Networking-Communication Software, Performance Analysis and Network Security).
- Data processing in Warehouse Management.
- Mobile devices applications.
- Multimedia/Computer graphics.
- Middleware Technology Development.

5. Guidelines for Project Documentation

Final Project Report: Project Report must be prepared as follows:

- A. The length of the report may be about 70 pages, with 1.5 line spacing, 1.25 inches margin on either side, Times New Roman font with Font size as 16 and Bold for Chapter names, 14 and Bold for headings and 12 for content. It should be printed on A4 size papers.
- B. In the Project Report the signatures of both student and Guide should be present wherever applicable.
- C. Contents of project report must contain:
 - Cover Page and Title Page (For template refer Annexure IV)
 - Bonafide Letter (For template refer Annexure V)
 - Abstract
 - Table of Contents(For template refer Annexure VI)
 - List of Figures(For template refer Annexure VII)
 - List of Tables(For template refer Annexure VIII)
 - Chapter 1: Introduction
 (This should include Overview of the System, Literature Survey, Proposed System, Objectives and Organization of the report).
 - Chapter 2: Requirement Specification
 (This should include SRS in proper structure based on Software
 Engineering concepts, E-R diagrams/Class diagrams/any related
 diagrams (if the former are not applicable), Data flow diagrams/other
 similar diagrams (if the former is not applicable), Data dictionary).

- Chapter 3: System Design (Modularization details, Data integrity & constraints including database design, Procedural design, User interface design).
- Chapter 4: Implementation
 (Complete code (well indented) or a detailed specification instead of code, comments & Description can also be provided. The program code should always be developed in such a way that it includes complete error handling, passing of parameters as required, placement of procedure/function statements as needed.)
- Chapter 5: Results (Input and Output Screen snapshots)
- Chapter 6: Limitations and Future Application of the Project.
- Conclusion
- References/Bibliography (For template refer Annexure IX)

Students who have done their project for any organization are permitted to attach detailed algorithm/specification instead of code, in case, the organization doesn't permit them to attach the code. Student needs to attach letter in the project report from the Project Manager of the project in the organization that they are not permitting student to attach the code. In the absence of such letter, the student needs to attach the code compulsorily.

The project report should consist of a Contents page; all pages of the report should be numbered; the content should be well organized in a meaningful manner; printouts of text & screen layouts should be original and should not be Xerox copy.

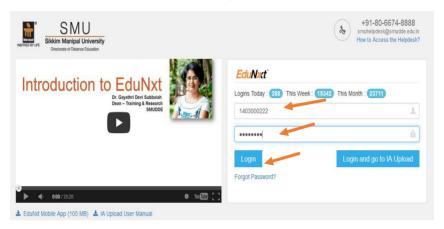
D. If any project report is received in the absence of the items listed above, it will be considered as violation of project guidelines. Violation of Project Guidelines may lead to rejection of the Project.

In any case, the length of the project report should not be more than 100 pages.

6. EduNxt Access Procedure

6.1 For Project Synopsis Submission

Step 1: Go to the EduNxt URL (http://edunxt.smude.edu.in) and enter your user-id and password then, Click on Login Button.

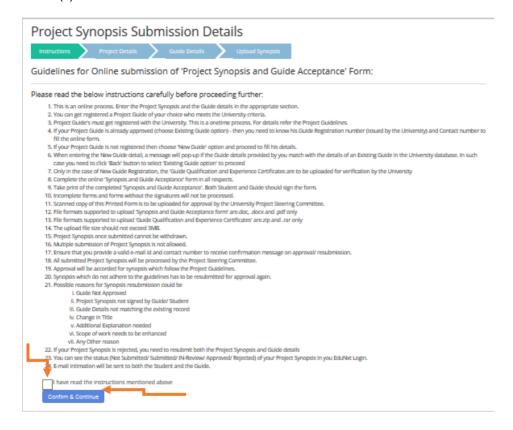


Step 2: Project Synopsis Classroom is available in the dashboard. Click on the project Synopsis to submit the Project synopsis.

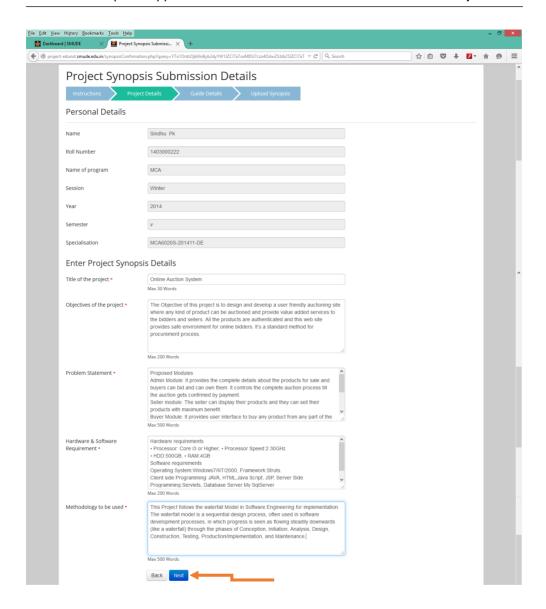


Step 3:(i) Read the Guidelines carefully.

(ii) Select the checkbox and click on "Confirm & Continue" button.

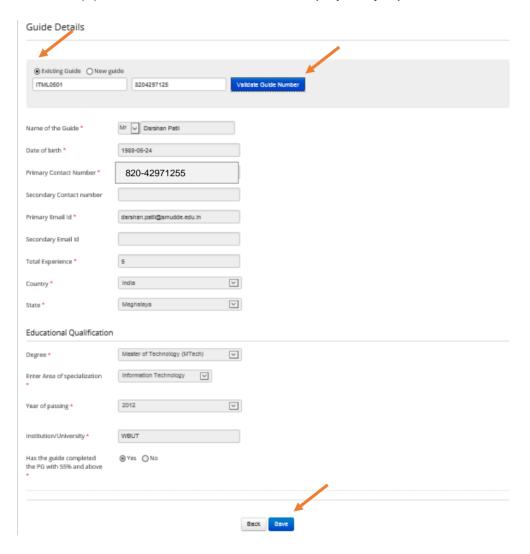


- **Step 4:** (i) Fill the Personal Details (Name, Roll Number, Name of the Program and etc.)
- (ii) Enter Project Synopsis Details (Title of the project, objectives of the Project as per the prescribed template.)
 - (iii) Note: Column marked with Asterix * are Mandatory.
 - (iv) Click on next button to enter Guide Details form.



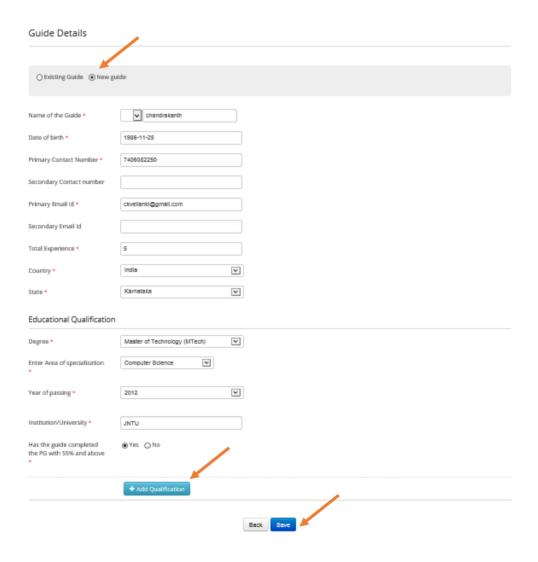
Step 5: Fill the Guide Details

- (i) Select the option (Existing Guide or New Guide) by clicking on the appropriate option button.
- (ii) If Existing Guide Provide Guide Registration number and Contact Number and Click on "Validate Guide Number"
- (iii) Click on Save button to submit project Synopsis.



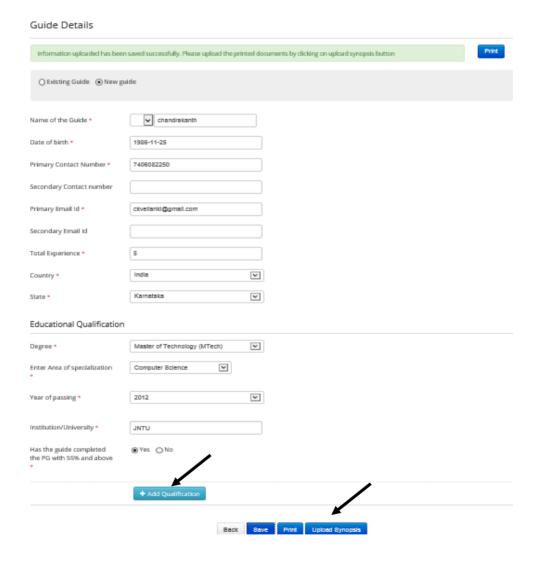
In Case of New Guide:

- (i) Select the "**New Guide**" button to enter Guide Details (Name of the Guide, Date of Birth and etc.)
- (ii) Provide the Educational Qualification of Guide (Degree, enter the area of specialization and etc...) Click on "Add Qualification" Button to enter more than one qualification.
- (iii) Note: Column marked with Asterix * are Mandatory
- (iv) Click on Save button.



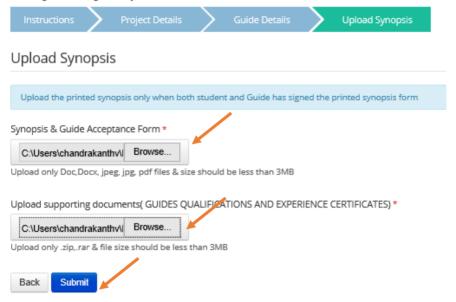
Step 6: Student can see the message "Information uploaded has been saved successfully"

(i) Click on 'Upload synopsis Button"

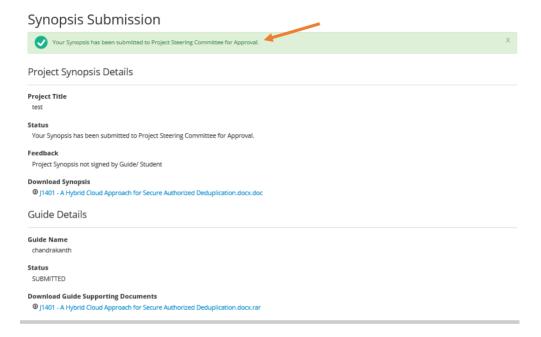


Step 7: To Upload Project Synopsis, Click on Browse button: 1. Synopsis & Guide Acceptance Form (should be in Doc, Pdf or jpeg format). 2. Upload Supporting documents (Guide Qualification and Experience Certificates) (Should be either .RAR or .Zip files).

Project Synopsis Submission Details



Step 8: "Your Synopsis has been submitted to Project Steering Committee for Approval" **message will be displayed**



7. Project Evaluation

The course titled "Project Work" bearing the subject code MCA6020 has 16 credits weight.

During the project work, the Project guide will monitor its progress. Total marks for the project work is 800. The Project Work **evaluation comprises of** two components as shown in Table 1.

Internal Assessment (IA) – 240 marks: After approval of project synopsis, PSC will evaluate and allot IA mark/s as per the weightage shown in Table 2.

University Examination – 560 marks: Final project report should be submitted to the University prior to the University Examination. On the day of examination student should demonstrate/present and appear for Viva-Voce examination. Project evaluation is done by assessing the project report, presentation and demonstration of the project and Viva as per the weightage shown in Table 2.

To be declared successful, the student should secure at least 40% marks separately in both (i) Internal Assessment (i.e. 96/240) and (ii) University term End examination (i.e. 224/560). Table 3 shows the project passing marks.

Table 1: Components of Project Examination

Program	Course Code	Credit	IA	UE	Total
MCA	MCA6020	16	240	560	800

Table 2: IA and UE Marks Distribution in Percentage

Parameter	Weightage in %	Evaluation Components
Project Title	10	IA
Objective	10	(240 marks)
Problem Statement	30	
Hardware and Software Requirement	10	
Methodology	40	
Project Report	50	UE
Demonstration + Presentation	20	(560 marks)
Viva	30	

Table 3: Project Passing Requirements

PAPER	PROJECT EXAM			REHENSIVE EXAM TOTAL MARKS		PASS MARKS
	MAXIMUM MARKS - A	PASSING MARKS - X	MAXIMUM MARKS - B	PASSING MARKS - Y	A + B	X + Y > 40 %
MCA 6020	800	320	N A	N A	800	320

Resubmission of the MCA project in case of failed students

If the student is unsuccessful in the project, he/she should exercise the whole cycle of the project again, right from the submission of the project synopsis. Students are advised to select a new topic for the project with Guide's suggestion and should prepare and submit the project synopsis to the project steering committee for approval as per the project guidelines.

Important points

- Not more than one student is permitted to work on a Project.
- A student should start with his project work after getting approval of both Synopsis and Guide from the University.
- If the title of the Project differs from the title mentioned in the Project Proposal, the Project Report will be rejected and will be returned back to the student.

ANNEXURE - I

SUBMISSION OF PROJECT SYNOPSIS AND GUIDE ACCEPTANCE FORM

(To be submitted to the project steering committee)

PART A: Synopsis Registration

I. Student Details:

- Name of the program :
- Name of the Student :
- Roll Number :
- Session & Year :

II. Project Details

- Title of the Project :
- Problem Statement : (About 500 words)
- Hardware requirements :
- Software requirements :
- Methodology to be used :

III. Guide Details:

- Name of Proposed Guide :
- Guide registration No. (If available) :
- Designation :
- Affiliation :
- Qualification :
- Total Experience :
- Communication Address :
- Contact No. :
- E-mail ID :

PART – B: Guide Acceptance

I Dr./Mr./Mrs.					working
as	with				
hereby confirm my willingness to gu	ide Mr./Ms.				
Roll No					topic) during
the Spring/Summer/Fall/Winter ses	sion of			_ year)	period
I agree to this timeline and also Assessment marks to the University.	to submit				
Date:		(5	Signature	of the G	Guide)
(Note: A Guide needs to get regis guiding a SMUDE project for the firs downloaded from the University Web	st time. Gui			-	
DECLA	ARATION				
I hereby declare that this project syr and will not submitted to any other l study.	•	•			•
Date:		(8	Signature	of the S	Student)
(*Filled in Application forms to be s Forms must be scanned in either .Pl the EduNxt student's Login. For upl document)	DF / .Doc fo	rmat	and sub	mitted	through

ANNEXURE II PROJECT GUIDE REGISTRATION FORM

(To be submitted to the project steering committee)

	S.No.	Name of the Degree	Specialization	Year of Passing	Institution/ University	Class Obtained
	(Please attach photocopies of degree certificates)					
6	6. Educ	cation Qualificatio	n (start with high	nest qualifi	cation):	
	v)	E-mail id	:			
	iv)	Contact No.				
	iii)	All communication (tick any one)	ons to be sent to	: Resident	ial/Office add	dress
	ii)	Office Address				
	i)	Residential Addr	ess:			
5	5. Cont	act Details	:			
4	l. Desi	gnation	:			
3	B. Pres	ent Employer	:			
2	2. Date	of Birth	:		Affix You Pho	0
1	. Nam	е	:			

7. Area of Specialization/Interest :

8.	Total Years of Experience	:
	(Please attach photocopies of Experie	ence letters)

S.No.	Name of the Organization	Designation	From	То

I hereby declare that the information provided by me is true. I agree with the rules and regulations given by the University.

		Guide Signature

FOR OFFICE USE

Following details have been verified

		Yes	No	
1)	Qualification			
2)	Experience			
3)	Approved for Department / Spe	ecialization		

Signature Signature (Member- Project Steering Committee) (Chairman-Project Steering Committee)

Annexure III PROJECT REVIEW REPORT

Name of the programme
 Name of the Student
 Roll Number
 Guide Name
 Guide Registration Number
 Communication Address
 Contact No
 Title of the Project
 Review Report

S.No	Particulars	Progress	Additional
		(Excellent / Good /	Remarks
		Satisfactory)	
	Review -	- 1	
1	Literature Survey		
2	Problem Design		
3	Overall Performance		
	Review -	. 2	
5	Implementation		
6	Testing		
7	Results		
8	Overall Performance		

Overall comments:

Signature of the Guide

(* To be enclosed in the Final Project Report)

Annexure IV

About Cover Page and Title Page

<TITLE OF PROJECT REPORT>

A PROJECT REPORT

Under the guidance of

<Guide Details>

Submitted by

<Student Details>

in partial fulfilment of the requirement for the award of the degree

of

Master of Computer Applications

Department of Information Technology



Sikkim Manipal University

Directorate of Distance Education

<MONTH>&<YEAR>

Annexure V



Sikkim Manipal University

Directorate of Distance Education

BONAFIDE CERTIFICATE

Certified that this project report titled "	,
is the bonafide work of "	<name of="" th="" the<=""></name>
CANDIDATE with REG.NO>" who carried out	the project work
under my supervision.	
SIGNATURE	
GUIDE	
< <name>></name>	

Annexure VI

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	ABSTRACT	i
	LIST OF FIGURES	ii
	LIST OF TABLES	iii
1.	INTRODUCTION	1
	1.1 GENERAL	1
	1.2	2
	1.2.1 General	5
	1.2.2	12
	1.2.2.1	19
	1.2.2.2	25
	1.2.2.3	29
	1.2.3	30
	1.3	45
	1.4	58
2.	REQUIRMENT SPECIFICATION	69
	2.1 GENERAL	75
	2.1.1	99
	2.2	100

Annexure: Project Review Report

Annexure VII

List of Figures

- 1. Figure <Chapter No.>.<Figure No> : <caption of the Figure 1>
- 2. Figure 1.2 : Database Storage
- 3.

Sample figure in the document:

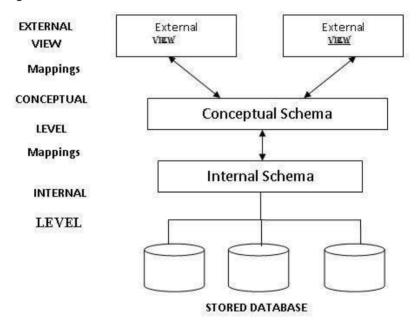


Figure 1.2: Database Storage

Annexure VIII

List of Tables

- 1. Table <Chapter No>.<Table No> : <caption of the table1>
- 2. Table 1.2 : Students Database
- 3.

Sample Table in the document:

Table 1.2: Students database

S.NO.	Reg.No.	Name	Dept	Sem
1	120000001	Aditya	IT	IV
2	120000002	Aditi	MBA	III

Annexure IX

References/Bibliography:

The listing of references should be in IEEE Reference Style. In "REFERENCES" all reference materials to be in alphabetical order in single spacing and left – justified. The reference material should be listed in the alphabetical order of the first author. Any website reference or books must be referred preceded by the publication references.

References:

- Chun-I Fan ; Dept. of Comput. Sci. & Eng., Nat. Sun Yat-sen Univ., Kaohsiung ; Chien-Nan Wu ; Wei-Zhe Sun"Multi-recastable E-Bidding Scheme "published in Intelligent Systems Design and Applications, 2008. ISDA '08. Eighth International Conference on (Volume:3)
- Patrick Maille, ENST Bretange and Bruno Tuffin, IRISA INRIA France "Multi-Bid Auctions for Bandwidth allocation in communication Networks" published in IEEE INFOCOM 2004.
- 3)
- 4) http://www.biddingforgood.com/auction/BiddingForGood.action
- 5)
- 6) "JAVA: Complete Reference" by Herbert Schildt 8th Edition, Tata Mc-Graw-Hill Education (2011)

Sikkim Manipal University