

EMGT 5220

Engineering Project Management

PROJECT PROPOSAL

ECOMMERCE WEBSITE DEVELOPMENT PROJECT

Instructor:

Thomas P. Cullinane, Ph.D.

Mechanical and Industrial Engineering

Program Director, Engineering Management

Student:

Anisha Ganeshkumar

NUID: 001430056

CONTENTS

1. LETTER OF TRANSMITTAL.....	3
2. PROJECT OBJECTIVES.....	4
3. SCOPE OF SERVICES.....	5
4. PROJECT ORGANIZATION.....	6
5. IMPLEMENTATION PLAN	
5.1.IDEF0.....	7
5.2.WORK BREAKDOWN STRUCTURE.....	8
5.3.RESPONSIBILITY CHART.....	9
5.4.SCHEDULING	
5.4.1. GANTT CHART.....	10
5.4.2. PERT ANALYSIS.....	10
5.5. RESOURCE ALLOCATION.....	11
6. FINANCIAL PLANNING.....	13
7.CONCLUSION.....	14
APPENDIX A.....	15
APPENDIX B.....	20
APPENDIX C.....	22
APPENDIX D.....	24
APPENDIX E.....	29
APPENDIX F.....	35

1. LETTER OF TRANSMITTAL

December 2, 2019

Professor Thomas Cullinane
Department of Mechanical and Industrial Engineering
330 Snell Engineering Center
Northeastern University
360 Huntington Avenue
Boston, MA 02115

SUBJECT: Proposal for developing an Ecommerce website for a local bookstore

Dear Professor Cullinane,

This Project aims at design and implementation of an Ecommerce website for a local bookstore situated in Boston. This ensures easy access to the offered products which hopes to expand the customer base of the bookstore. The objective is to develop a high-end design with clean and efficient navigation structure for different devices. The Project proposal comprehends researching, planning, wireframing, developing and testing. The intention is to provide detailed framework explaining the plans and strategies involved. It also establishes process flow, timeframe and budget. The focus is to satisfy the website requirements with cost-effective methodologies offering Quality assurances.

Thank you,
Sincerely,

Anisha Ganeshkumar
ganeshkumar.a@husky.neu.edu

2. PROJECT OBJECTIVES

The objectives can be mainly summarised as

1. To design, develop and implement a visually appealing Ecommerce website for a bookstore that works on a variety of devices – Smartphones, Tablets, Desktop and other mobile devices
2. To test and implement the website offering Quality assurances
3. To ensure that the website reaches a wider range of customers due to its ease of access and efficient customer interface

Critical success factors of the project

The critical success factors of the project can be summarised as the following

1. The entire project organizations support from design to implementation driven by the directives of proper leadership
2. Build a solid website infrastructure that will self-regulate the functions of the website to preserve its integrity
3. Produce a superior and efficient purchase experience that resonates with the customers
4. Developing a detailed and efficient project plan for designing, developing and testing with methods of procedure
5. Customer satisfaction that leads to customer loyalty and trust

3.SCOPE OF SERVICES

RESEARCH

- Understand the business goals, customer expectations and target market
- Establish the context and benchmarks of functions of the website by looking into competitive landscape

PLANNING

- Determine user pathways and website flow

DESIGN

- Prepare wireframes and interface layouts that compliments the graphical theme of the website
- Optimize navigation and user interface

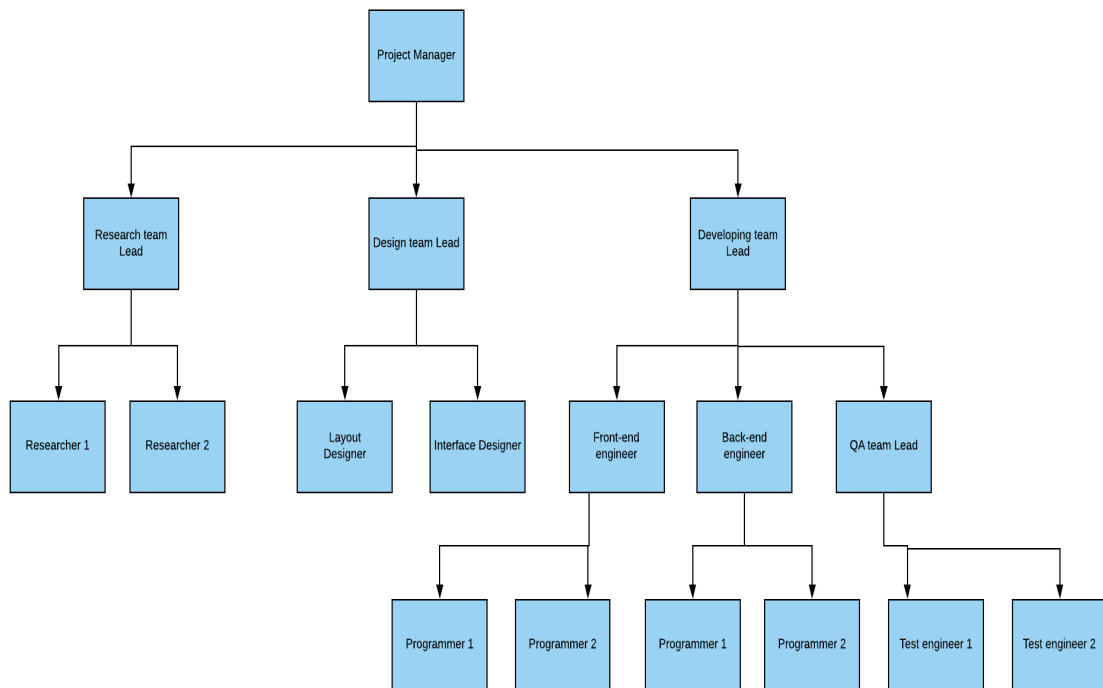
DEVELOPMENT

- Integration of latest front-end technologies to enhance user interface
- Use administration and application programming to integrate databases with the ecommerce features like shopping cart, checkout, shopping list etc.

QUALITY ASSURANCE

- Testing to ensure an error free code and a bug free application for smooth migration to the live server

4. PROJECT ORGANIZATION



The project organization is an independent working team able to devote their time and energy solely to the tasks of this project. As this project is a complete project from R&D to developing and testing, the most appropriate organization would be Pure project organization. Apart from the Project Manager, the project team consists of the Research team, Design team and the Developing team. There are 2 researchers in the researcher team. The design team lead monitors the Layout Designer and the interface designer. Under the developing team lead there are 3 engineers and 4 programmers.

5. IMPLEMENTATION PLAN

The implementation plan consists of various methodologies like IDEFO, Work breakdown structure, Project schedule with resource allocation and Financial planning for better understanding of the process and workflow for all the stake holders.

5.1. IDEF0

IDEF is a tool that helps to present the system that shows the project's purpose with specific contexts. It is a functional model. It helps the project team to understand the project flows and requirements. It identifies the constraints under which the tasks of the projects operate and the inputs needed to finish them successfully. IDEF also identifies the purpose of the project and the mechanisms to accomplish them.

The purpose is to successfully plan all appropriate tasks and mechanisms to build a customer friendly Ecommerce website. The research team finalizes the specifications and website requirements. The design team confirms the layout, architecture and the programming expectations. Furthermore, the developers develop the expected website and the testing team makes sure to retain the quality of it.

The IDEF0 is presented in APPENDIX A.

5.2.WORK BREAKDOWN STRUCTURE

In Work breakdown structure, the project is divided into finer levels of details. The project is broken down into tasks and subtasks, to work packages and work units.

The WBS of this project is shown in APPENDIX B

5.3. RESPONSIBILITY CHART

An approach to identify the human resources needed for the project is to use the RACI matrix. The project manager is accountable for the overall activities of the project, but the process leads are held accountable for the activities of specific tasks.

In order to clearly understand their obligations and who should report to whom a WBS is created.

The RACI matrix of this project is shown in APPENDIX C

5.4. SCHEDULING

For scheduling of the project two methods are used: Gantt chart and Pert analysis

5.4.1. Gantt chart

Gantt chart is helpful in expediting, sequencing and relocating resources among tasks.

Gantt chart is presented in APPENDIX D.

5.4.2 Pert Analysis

Pert Analysis is presented in APPENDIX E.

5.5.RESOURCE ALLOCATION





The project team consists of the Project Manager, Process team leads and engineers or programmers.



The research team is responsible for researching the target market, analysing the business requirements and customer requirements for customer satisfaction. They also come up with the final website specifications.

The design team is accountable for finalising the customer and website requirements. They design the customer interface and website layouts.

The development team manages the front-end and back-end development. The front-end developers program the website pages including the listings page, check out page and payment page. The back-end developers program and manage the databases for the website's front-end. They also integrate the back-end with the front-end.

The Quality Assurance team tests the implementation, integration and acceptance of the website. They provide us with the reports.

ID		Resource Name	Work
1		Project Manager	0 hrs
2		Research team Lead	56 hrs
		<i>Technology constraints</i>	24 hrs
		<i>Web specifications</i>	32 hrs
3		Design team Lead	32 hrs
		<i>Review customer interface design</i>	16 hrs
		<i>Review website layout</i>	16 hrs
4		Developing team Lead	0 hrs
5		Front-end engineer	152 hrs
		<i>Checkout page</i>	96 hrs
		<i>Payment integrations</i>	56 hrs
6		Back-end engineer	160 hrs
		<i>Integrate with website</i>	160 hrs
7		QA team Lead	240 hrs
		<i>Implementation test report</i>	120 hrs
		<i>Integration test report</i>	40 hrs
		<i>Acceptance test report</i>	80 hrs
8		Researcher 1	48 hrs
		<i>Business standards analysis</i>	32 hrs
		<i>Form business requirements</i>	16 hrs
9		Researcher 2	64 hrs
		<i>Customer and target market analysis</i>	40 hrs
		<i>Form Interface requirements</i>	24 hrs
10		Layout designer	80 hrs
		<i>Design website Layout</i>	80 hrs
11		Interface designer	40 hrs
		<i>Customer interface design</i>	40 hrs
12		Front-end programmer 1	96 hrs
		<i>Program registration page</i>	96 hrs
13		Front-end programmer 2	80 hrs
		<i>Program listings page</i>	80 hrs
14		Backend programmer 1	0 hrs
15		Back-end programmer 2	192 hrs
		<i>Customer information database</i>	120 hrs
		<i>Bill payment information</i>	72 hrs
Page 1			

ID		Resource Name	Work
16		Test engineer 1	120 hrs
		<i>Implementation test report</i>	120 hrs
17		Test engineer 2	40 hrs
		<i>Integration test report</i>	40 hrs
18		Back-end programmer 1	232 hrs
		<i>Login database</i>	120 hrs
		<i>Orders database</i>	112 hrs

6. FINANCIAL PLANNING

The estimated expenses of the project are given in financial planning. The following assumptions are made during this process,

- Overhead costs are not included
- Renting or obtaining costs of software required are not included. It is assumed that the team working on the project already has the software resources
- The employee's costs or the Human resources costs are estimated only for the hours that they work on this project
- The employees are already the part of this team, so no hiring process is needed

The financial planning tables are presented in APPENDIX F.

7. CONCLUSION

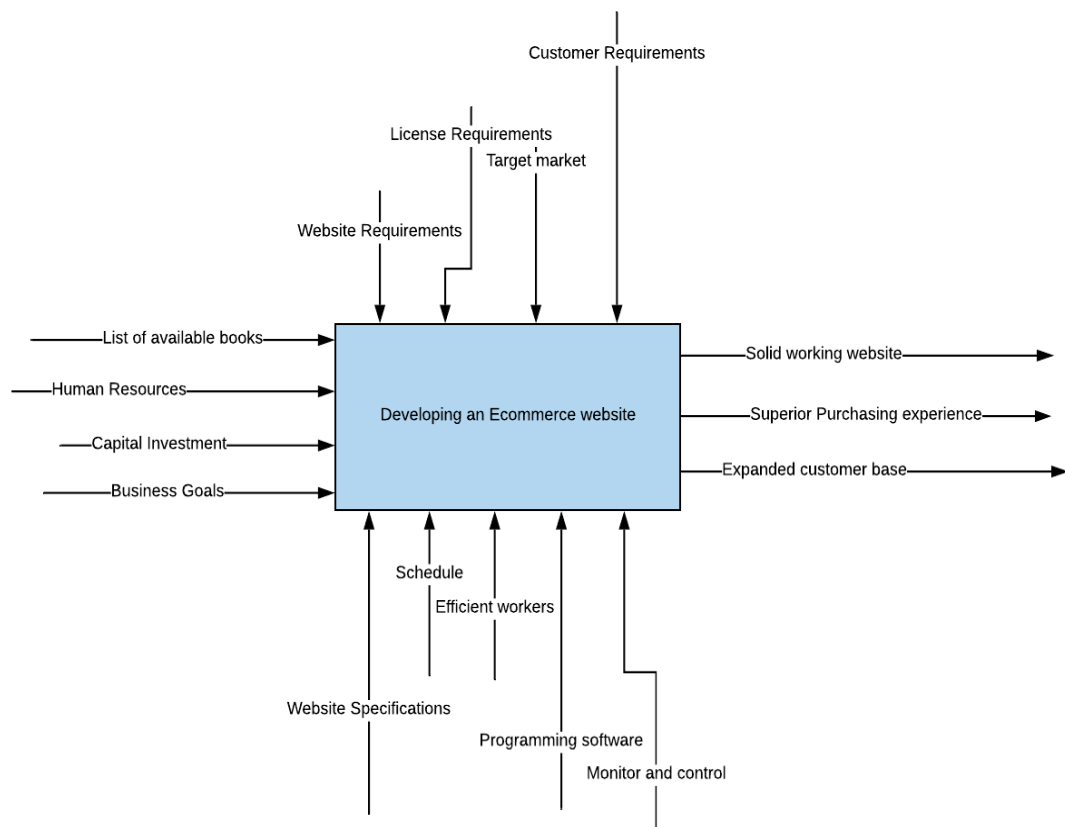
In conclusion, the website development project for the bookstore has a high scope of becoming a successful project. As in all projects, this project can also come across potential problems and errors. Such as, delay due to changes induced by test reports. However, with well-defined and efficient planning of the project, implementing the mechanisms mentioned, the project team will be able to overcome those problems.

To guarantee success of the project, the schedule and resource allocation provided should be followed exactly by the project team. Close monitoring of milestones and the budget is required.

The success of the project aims to yield more customers and retain the existing customers by providing ease of access. This leads to improved customer satisfaction and reach.

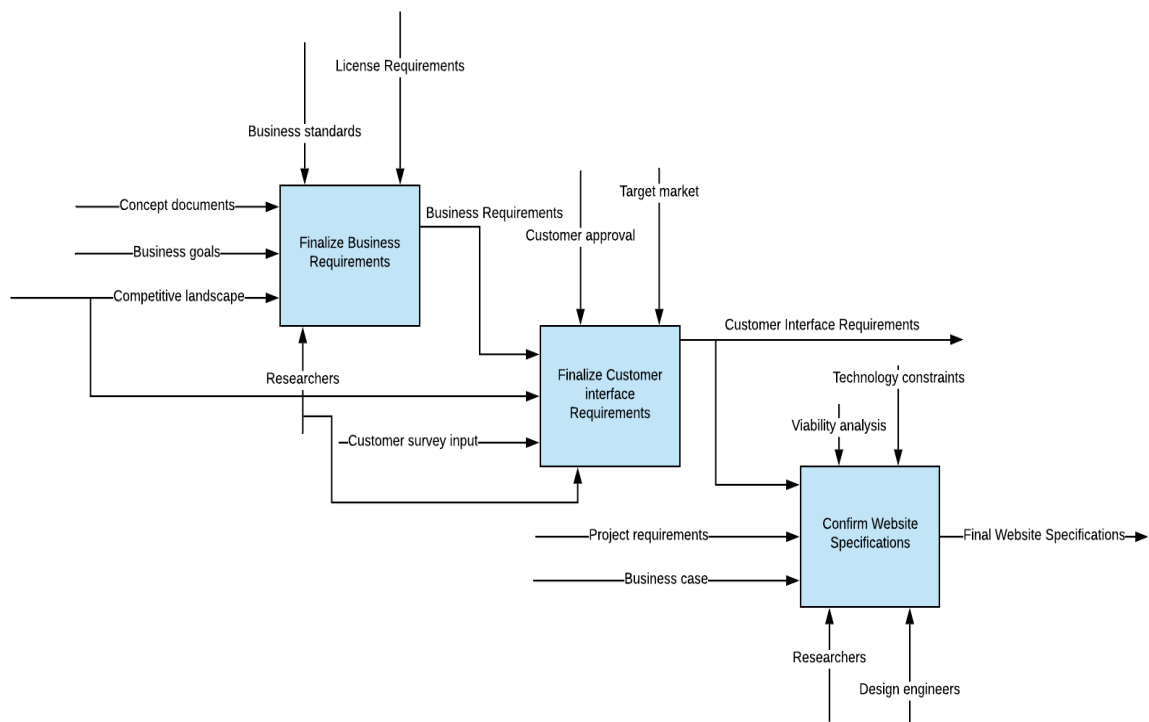
The profit of the bookstore is expected to increase by its growing customers.

APPENDIX A



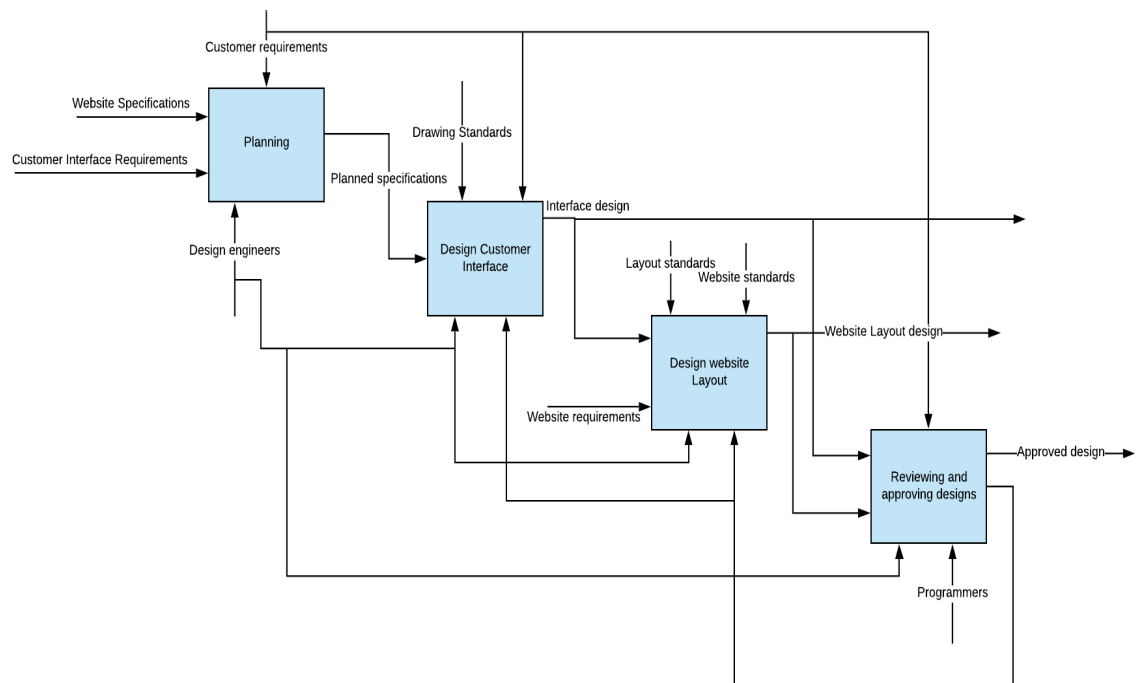
Node A0

Type: Developing an Ecommerce website



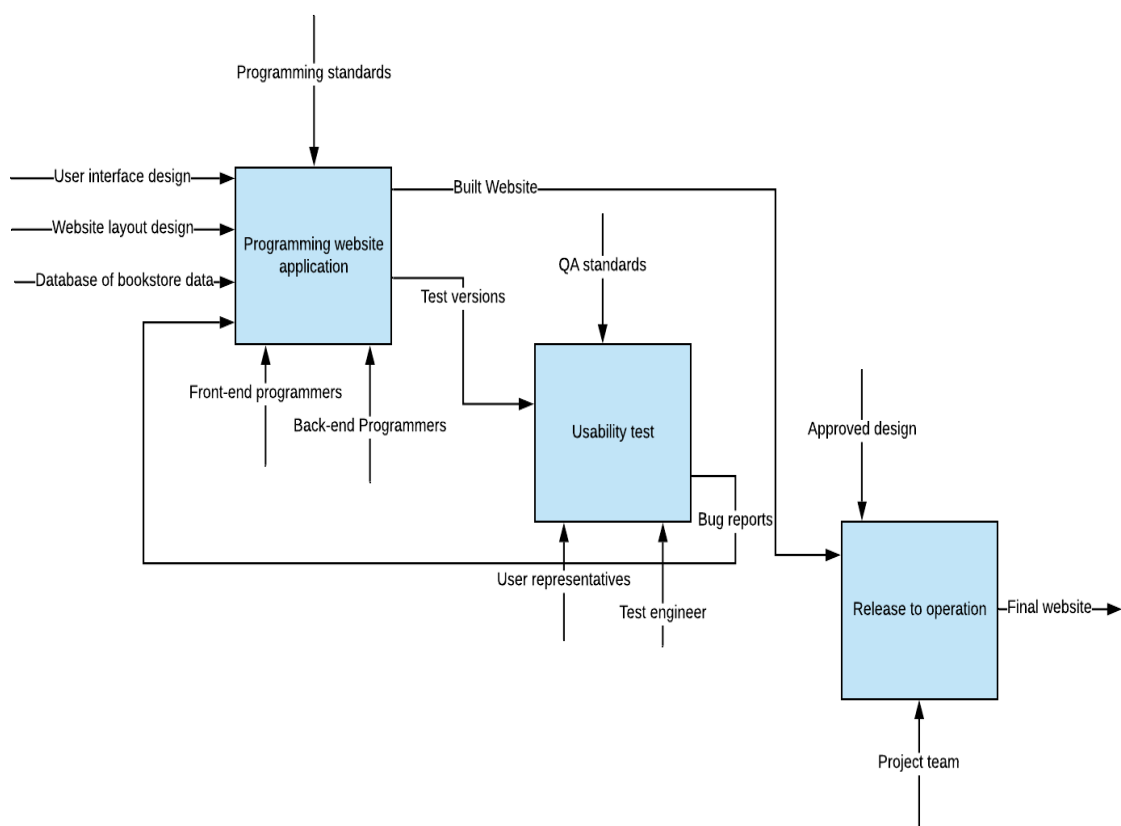
Node A1

Title: Developing an Ecommerce website



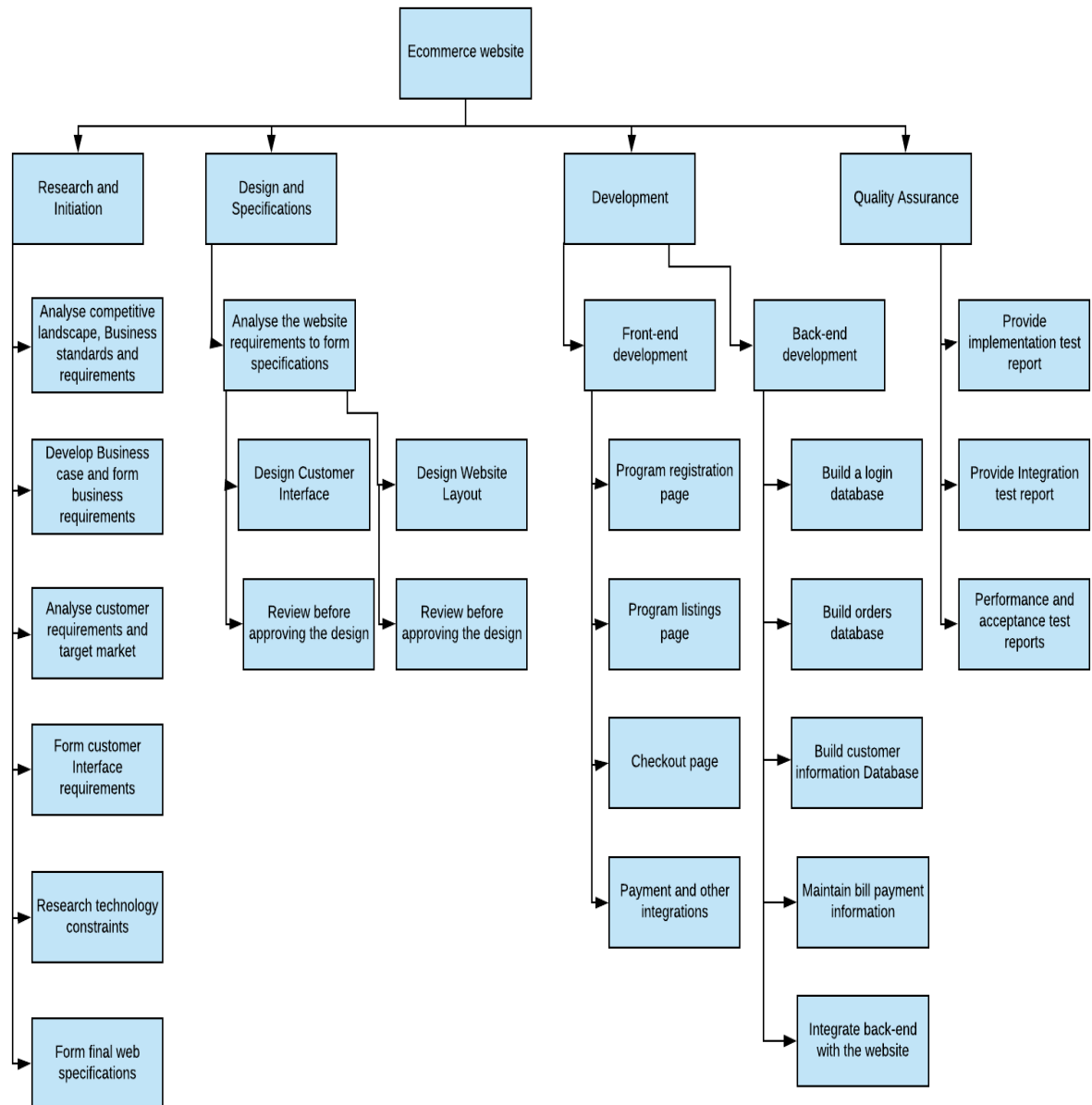
Node A2

Title: Developing an Ecommerce website



APPENDIX B

Work Breakdown Structure:



APPENDIX C

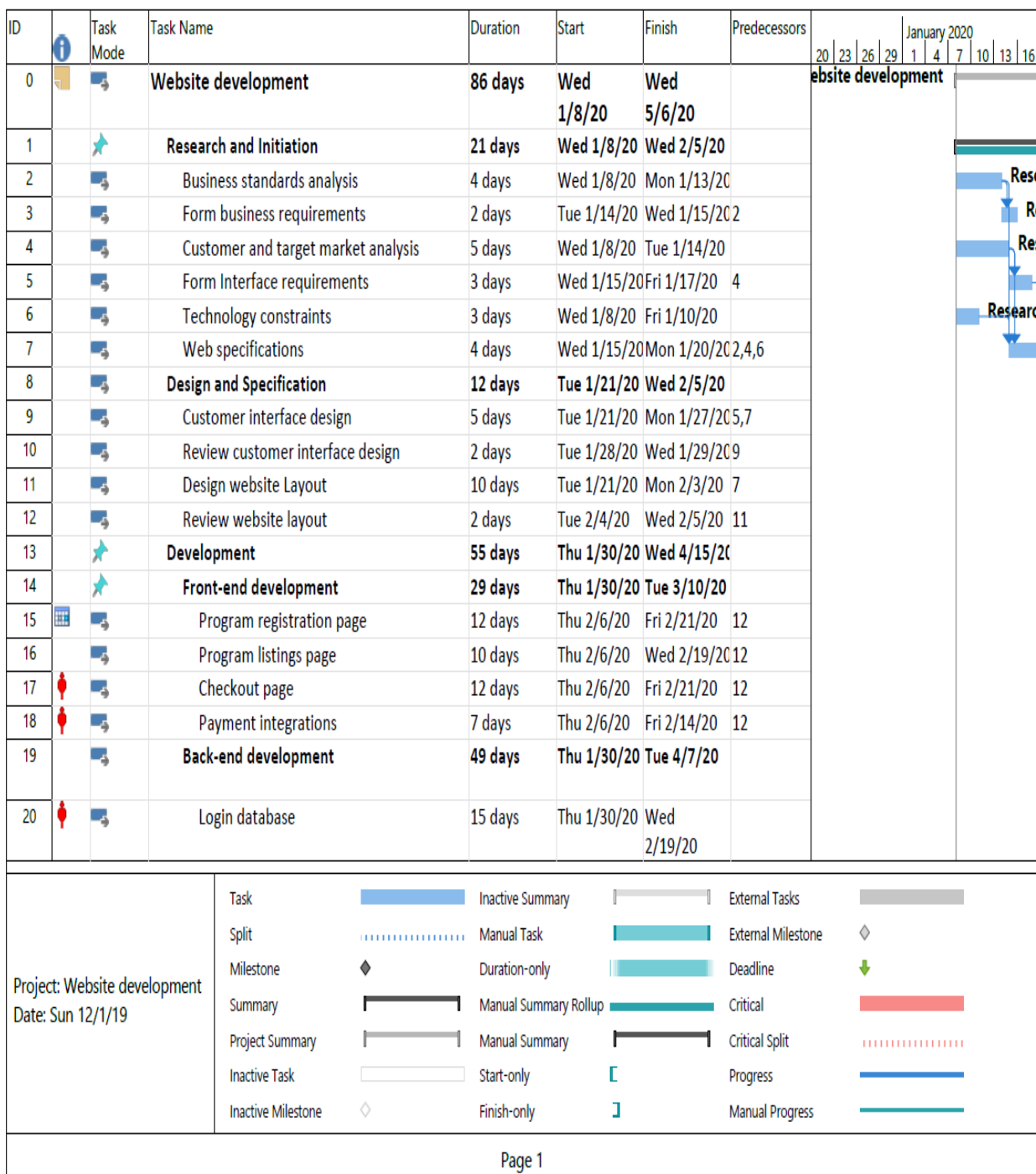
RESPONSIBILITY CHART

















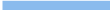




















2	WEBSITE DEVELOPMENT										Responsible, Accountable, Consulted, Informed									
3																				
			ROLES																	
			Project manager	Research team lead	Design team lead	Developing team lead	Front-end engineer	Backend engineer	QA team lead	Researcher 1	Researcher2	Interface designer	Layout designer	Front end programmer 1	Front end programmer 2	Backend programmer 1	Backend programmer 2	Test Engineer 1	Test Engineer 2	
4																				
5	Deliverable or Task	Status	Project team																	
6	Research and Initiation																			
7	Business standards analysis			I						C	R									
8	Form Business Requirements		I	A						C	R									
9	Customer and target market analysis			I						R	C									
10	Form interface requirements		I	A						R	C									
11	Technology constraints			R						C	C									
12	Web specifications		I	R	C					C										
13	Design and specifications																			
14	Customer interface design				I							R	C							
15	Review customer interface design		I		R							A	C							
16	Website layout				I							C	R							
17	Review website layout		I		R							C	A							
18	Development																			
19	Program registration page						C							R	C					
20	Program listings page						C							R	C					
21	Checkout page						C							C	R					
22	Payment integrations		I				R							C						
23	Login database							C								R	C			
24	Orders database							C								C	R			
25	Customer information interface							C								C				
26	Bill payment information							R									C			
27	Integrate with website		I					R								C				
28	Quality Assurance																			
29	Implementation test report								I									R	C	
30	Integration test report								I									C	R	
31	Acceptance test report								R									C	S	
32	Insert new rows above this one																			
33																				

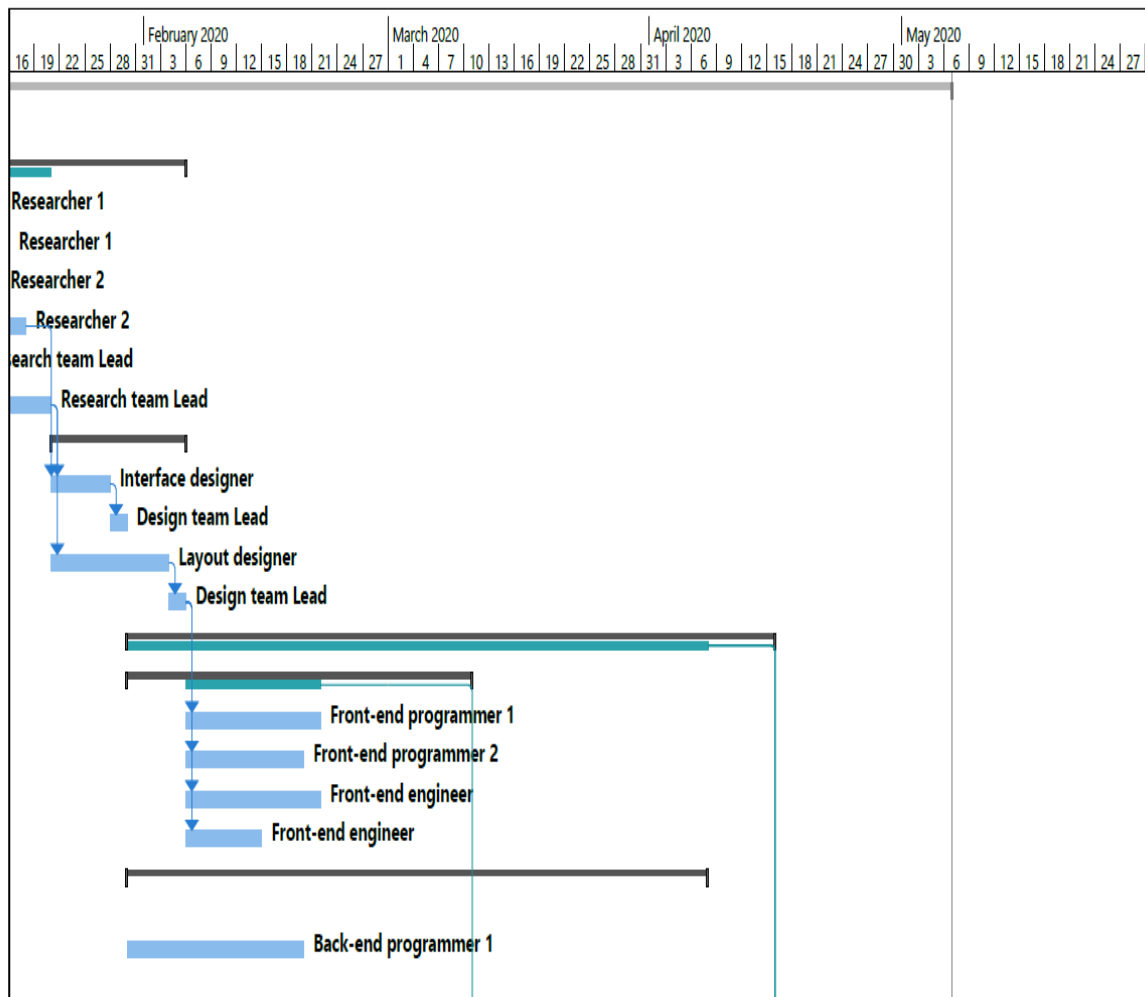
D	Driver
R	Responsible
A	Accountable
S	Support
C	Consulted
I	Informed

APPENDIX D

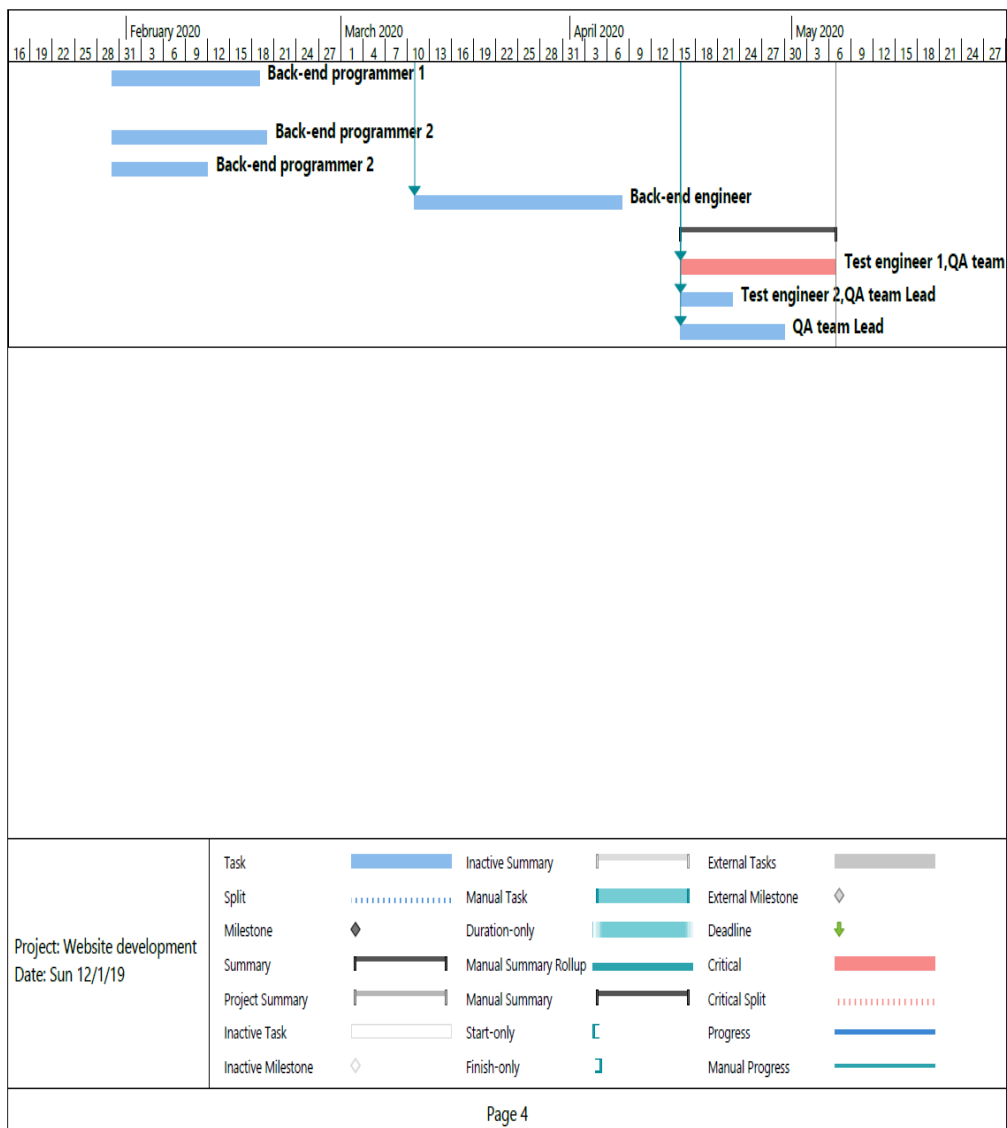
GANTT CHART



ID		Task Mode	Task Name	Duration	Start	Finish	Predecessors	<div><div>20232629</div><div>January 2020</div><div>147101316</div></div>											
21			Orders database	14 days	Thu 1/30/20	Tue 2/18/20													
22			Customer information database	15 days	Thu 1/30/20	Wed 2/19/20													
23			Bill payment information	9 days	Thu 1/30/20	Tue 2/11/20													
24			Integrate with website	20 days	Wed 3/11/20	Tue 4/7/20	14												
25			Quality Assurance	15 days	Thu 4/16/20	Wed 5/6/20													
26		 	Implementation test report	15 days	Thu 4/16/20	Wed 5/6/20	13												
27			Integration test report	5 days	Thu 4/16/20	Wed 4/22/20	13												
28			Acceptance test report	10 days	Thu 4/16/20	Wed 4/29/20	13												
Project: Website development Date: Sun 12/1/19		Task		Inactive Summary		External Tasks													
		Split		Manual Task		External Milestone													
		Milestone		Duration-only		Deadline													
		Summary		Manual Summary Rollup		Critical													
		Project Summary		Manual Summary		Critical Split													
		Inactive Task		Start-only		Progress													
		Inactive Milestone		Finish-only		Manual Progress													
Page 2																			



Project: Website development Date: Sun 12/1/19	Task		Inactive Summary		External Tasks	
	Split		Manual Task		External Milestone	
	Milestone		Duration-only		Deadline	
	Summary		Manual Summary Rollup		Critical	
	Project Summary		Manual Summary		Critical Split	
	Inactive Task		Start-only		Progress	
	Inactive Milestone		Finish-only		Manual Progress	



APPENDIX E

PERT ANALYSIS

Website development

Start: Wed 1/8/20 ID: 0
Finish: Wed 5/6/20Dur: 86 days
Comp: 0%

Research and Initiation

Start: Wed 1/8/20 ID: 1
Finish: Wed 2/5/20Dur: 21 days
Comp: 0%

Design and Specification

Start: Tue 1/21/20 ID: 8
Finish: Wed 2/5/20Dur: 12 days
Comp: 0%

Page 1

Development

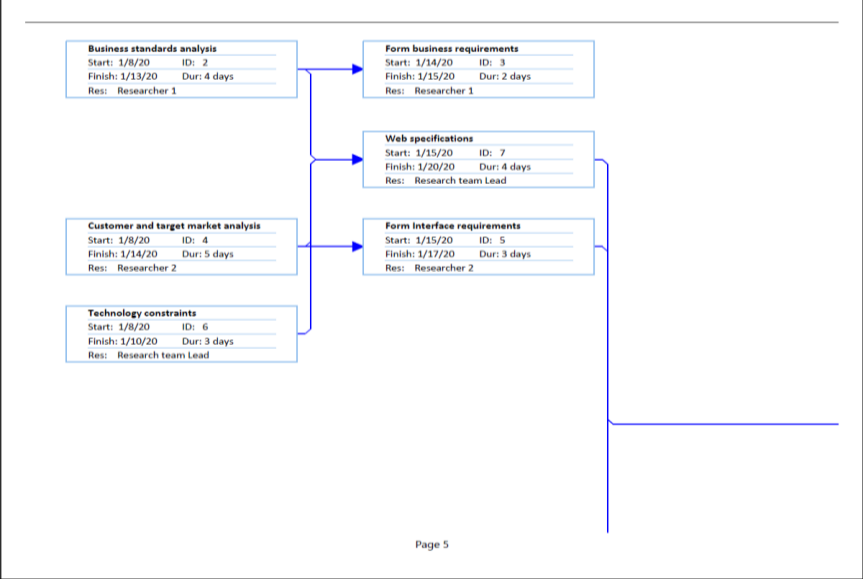
Start: Thu 1/30/20 ID: 13
Finish: Wed 4/15/20Dur: 55 days
Comp: 0%

Page 2

Quality Assurance

Start: Thu 4/16/20 ID: 25
Finish: Wed 5/6/20Dur: 15 days
Comp: 0%

Page 4



Back-end development
Start: Thu 1/30/20 ID: 19
Finish: Tue 4/7/20 Dur: 49 days
Comp: 0%

Login database
Start: 1/30/20 ID: 20
Finish: 2/19/20 Dur: 15 days
Res: Back-end programmer 1

Orders database
Start: 1/30/20 ID: 21
Finish: 2/18/20 Dur: 14 days
Res: Back-end programmer 1

Customer information database
Start: 1/30/20 ID: 22
Finish: 2/19/20 Dur: 15 days
Res: Back-end programmer 2

Bill payment information
Start: 1/30/20 ID: 23
Finish: 2/11/20 Dur: 9 days
Res: Back-end programmer 2

Integrate with website
Start: 3/11/20 ID: 24
Finish: 4/7/20 Dur: 20 days
Res: Back-end engineer

Page 7

Implementation test report
Start: 4/16/20 ID: 26
Finish: 5/6/20 Dur: 15 days
Res: Test engineer 1, QA team Lead

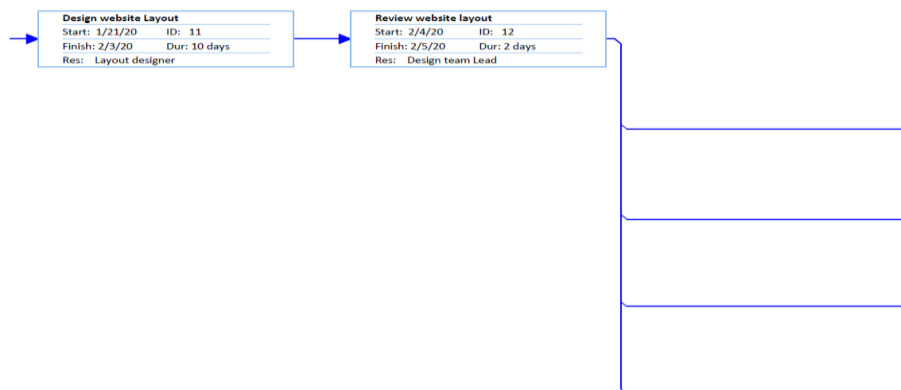
Integration test report
Start: 4/16/20 ID: 27
Finish: 4/22/20 Dur: 5 days
Res: Test engineer 2, QA team Lead

Acceptance test report
Start: 4/16/20 ID: 28
Finish: 4/29/20 Dur: 10 days
Res: QA team Lead

Page 8



Page 9



Page 10

→ **Program registration page**
 Start: 2/6/20 ID: 15
 Finish: 2/21/20 Dur: 12 days
 Res: Front-end programmer 1

→ **Program listings page**
 Start: 2/6/20 ID: 16
 Finish: 2/19/20 Dur: 10 days
 Res: Front-end programmer 2

→ **Checkout page**
 Start: 2/6/20 ID: 17
 Finish: 2/21/20 Dur: 12 days
 Res: Front-end engineer

→ **Payment integrations**
 Start: 2/6/20 ID: 18
 Finish: 2/14/20 Dur: 7 days
 Res: Front-end engineer

Project: Website development Date: Sun 12/1/19	Critical		Summary		Critical External	
	Noncritical		Critical Inserted		External	
	Critical Milestone		Inserted		Project Summary	
	Milestone		Critical Marked		Highlighted Critical	
	Critical Summary		Marked		Highlighted Noncritical	

APPENDIX F

FINANCIAL PLANNING

Budget Plan		
Tasks		
Website Development	Total Budget	Task specific
1. Research and Initiation	\$77,900	
1.1 Business standards analysis		\$11,000
1.2 Form Business requirements		\$4,500
1.3 Customer and target market analysis		\$13,800
1.4 Form interface requirements		\$6,980
1.5 Technology constraints		\$41,620
1.6 Web specifications		
2. Design and specification	\$404,800	
2.1 Customer interface design		\$201,890
2.2 Review customer interface design		\$5,900
2.3 Design website Layout		\$188,220
2.4 Review website Layout		\$8,790
3. Development	\$2,600,900	
3.1 Front-end development		\$1,450,600
3.1.1 Program registration page		\$300,800
3.1.2 Program listings page		\$149,800
3.1.3 Checkout page		\$670,700
3.1.4 Payment Integration		\$329,300
3.2 Back-end development		\$1,150,300
3.2.1 Login database		\$150,300
3.2.2 Orders database		\$350,890
3.2.3 Customer information database		\$249,800
3.2.4 Bill payment information		\$290,550
3.2.5 Integrate with website		\$108,760
4. Quality Assurance	\$50,000	
4.1 Implementation test report		\$22,060
4.2 Integration test report		\$17,023
4.3 Acceptance test report		\$10,917
TOTAL BUDGET	\$3,133,600	

Labor Costs	Wage/hour	No of hours required to complete the project	Total Wage
Designation			
Project Manager	\$85	156	\$13,260
Research team lead	\$90	56	\$5040
Design team Lead	\$85	32	\$2,720
Developing team Lead	\$70	30	\$2,100
Front-end engineer	\$77	152	\$11,704
Back-end engineer	\$70	160	\$11,200
QA team lead	\$65	240	\$15,600
Researcher 1	\$50	48	\$2,400
Researcher 2	\$45	64	\$2,880
Layout Designer	\$65	80	\$5,200
Interface designer	\$48	40	\$1,920
Front-end programmer 1	\$80	96	\$7680
Front-end programmer 2	\$55	80	\$4,400
Back-end programmer 1	\$70	232	\$16,240
Back-end programmer 2	\$45	192	\$8640
Test engineer 1	\$55	120	\$6,600
Test engineer 2	\$45	40	\$1,800
		TOTAL BUDGET	\$119,384