



LKS SMK



LKS SMK



6 - 12 MEI 2018 • MATARAM • NUSA TENGGARA BARAT

SOAL BIDANG LOMBA IT SOFTWARE SOLUTIONS FOR BUSINESS

1. PENDAHULUAN

Kecepatan globalisasi yang pesat dalam dekade terakhir sebagian besar didorong oleh perkembangan Teknologi Informasi dan Komunikasi (TIK). Pakar IT semakin diminati di beberapa bidang, salah satunya adalah menyediakan solusi perangkat lunak untuk bisnis.

Pengembangan solusi perangkat lunak untuk meningkatkan produktivitas bisnis mencakup berbagai keterampilan dan disiplin ilmu. Kunci untuk ini adalah kesadaran akan sifat industri yang berubah dengan cepat dan kemampuan untuk mengikuti perubahan yang cepat.

Solusi profesional perangkat lunak TI selalu bekerja sama dengan klien untuk memodifikasi sistem yang ada atau menciptakan sistem baru. Mungkin juga memodifikasi perangkat lunak "pasaran" dan mengintegrasikannya ke dalam sistem yang ada. Mereka seringkali bekerja sebagai bagian dari tim profesional perangkat lunak yang bertanggung jawab atas spesifikasi kebutuhan, analisis dan perancangan sistem, konstruksi, pengujian, pelatihan, dan implementasi, serta pemeliharaan sistem perangkat lunak bisnis.

Tugas yang dilakukan oleh profesional solusi perangkat lunak TI termasuk namun tidak terbatas pada hal berikut:

- Meninjau kembali sistem saat ini dan memberikan saran untuk perbaikan, termasuk analisis biaya manfaat serta menganalisis dan menentukan kebutuhan pengguna
- Menghasilkan spesifikasi terperinci untuk sistem baru atau untuk modifikasi sistem yang ada
- Mengembangkan sistem perangkat lunak dan menguji solusi perangkat lunak secara menyeluruh.
- Mempersiapkan materi pelatihan pengguna, melatih pengguna, dan menyajikan solusi perangkat lunak kepada pengguna
- Menginstal, menerapkan, dan memelihara sistem perangkat lunak

Para ahli dibidang Perangkat lunak untuk solusi Bisnis ini dapat berkarir di perusahaan besar, menengah, dan kecil sebagai ahli perangkat lunak, atau di perusahaan konsultan sebagai konsultan, dan kontraktor.

2. SPESIFIKASI KOMPETENSI

Kompetisi ini dirancang untuk menguji keahlian pengguna perangkat lunak aplikasi khusus keterampilan yang terkait:

- Menganalisa sistem menggunakan alat dan teknik modeling database dengan menggunakan Entity Relationship Diagram (ERD)
- Menggunakan kemampuan investigasi untuk mendapatkan kebutuhan pengguna (pencarian dan analisa dokumen – dokumen))
- Menuliaskan fungsi berdasarkan sifat - sifatnya (inputs, outputs, pre-conditions and post-conditions).
- Menggunakan IDE terbaru dan mengidentifikasi kekuatan dan kelemahan dari setiap pengembangan aplikasi.
- Melakukan pencarian, evaluasi dan integrase libraries dan frameworks yang sesuai dan dibutuhkan oleh aplikasi yang dikembangkan.
- Mengembangkan struktur database dan kamus data.
- Menggunakan fungsionalitas .NET environment untuk mengembangkan solusi aplikasi berdasarkan spesifikasi yang dibutuhkan.
- Menggunakan SQL Server untuk menyimpan dan mengatur data untuk sistem yang dikembangkan.
- Mengembangkan aplikasi multi - tier
- Mengembangkan aplikasi mobile untuk client-server based system
- Melakukan demo aplikasi yang dikembangkan untuk menyelesaikan kasus bisnis yang diberikan.
- Melakukan presentasi aplikasi di depan klien untuk memberikan rangkuman fungsional dari aplikasi yang dikembangkan.

Deskripsi Teknis Analisis

Dari list technical description di atas, dapat di rangkum menjadi :

1. Work Organization and Management
2. Communication and Interpersonal Skill
3. Problem Solving, innovation and Creativity
4. Analyze and Designing Software Solution
5. Developing Software Solution
6. Testing Software Solution
7. Documenting Software Solution

Secara umum akan terbagi dalam 5 modul utama

Module	Software
Database Creation and Main Form Development	Microsoft Visual Studio Community Edition 2015, SQL Server Express Management Studio 2014, and SQL server 2014 (Express Edition)
Master Form Development	Microsoft Visual Studio Community Edition 2015, SQL Server Express Management Studio 2014, and SQL server 2014 (Express Edition)
Transaction Form Development	Microsoft Visual Studio Community Edition 2015, SQL Server Express Management Studio 2014, and SQL server 2014 (Express Edition)
Database Development	SQL Server Express Management Studio 2014, and SQL server 2014 (Express Edition)
Mobile Application Development	Android Studio Versi 2.3.3.

3. STRATEGI ASESMEN DAN SPESIFIKASI

- Penilaian hasil lomba akan dilakukan per modul setelah setiap modul selesai.
- Peserta lomba yang mampu menyelesaikan satu modul lomba sebelum waktu pengumpulan (selesai lebih cepat) diizinkan untuk mulai mengerjakan modul berikutnya.
- Peserta tidak diperkenankan mengerjakan atau merevisi modul yang sudah lewat / sudah selesai dan yang sudah dikumpulkan.
- Peserta lomba tidak diperbolehkan membawa materi elektronik dan cetak ke area kompetisi.
- Juri akan memberi nilai berdasarkan daftar cek yang ada (marking form). Untuk setiap list yang ada mungkin berisi lebih dari satu komponen penilaian. Hasil yang salah atau tidak benar pada salah satu komponen tersebut akan dianggap sebagai jawaban yang salah.

4. SKEMA PENILAIAN

Persentase penilaian:

- Database Creation and Main Form Development : 17%
- Master Form Development : 21%
- Transaction Form Development : 32%
- ERD Design and Data Dictionary : 15%
- Mobile Application Development : 15%

5. PROYEK UJI LKS

Spesifikasi yang dibutuhkan dan aspek detail yang di uji sebagai berikut:

a. Database Creation and Main Form Development

- Creating physical model of the database
 - All entities are translated into database objects as instructed in the test project
 - Define the relationship between the entities
 - All the constraint required are implemented to support the system
- Creating Application Main Form
 - Login Form work using existing user data and roles
 - Navigation Form to navigate between form
 - Information Form can show instructed information
 - Showing media on application such as picture / video files

b. Master Form Development

- All master form developed can support the business process flow required in the test project
- Database query and connection are working correctly
 - creating connection between application and the database
 - query to display data
 - query to insert data
 - query to update data
 - query to delete data
 - query to search data
 - query to sorting data
- Uploading Files to the Application
- Auto-searching on Data Tables from text boxes input
- Date and Time Validation

c. Transaction Form Development

- All transaction form developed can support the business process flow required in the test project
- Database query and connection are working correctly
 - creating connection between application and the database
 - query to display data, Join Table, Aggregate
 - query to insert data
 - query to update data
 - query to delete data
 - query to search data
- Programming logic to solve given requirements
- Date and Time Validation
- Date Format
- Number and String Format

- Chart Component in .net
- Report in .net

d. Database Development

- Solve the given case by designing Database in Sql Server
- Relationship defining every two participating entities
- Attributes defining the properties of entities
- Cardinality defining number of instance of an entity from a relation that can be associated with the relation
- Providing the Data each table.

e. Mobile Application Development

- All mobile application form developed can support the business process flow in the test project.
- Programming logic to solve given requirements
- Number and String Format
- Database Query / File Read to display data in mobile application

6. KETRAMPILAN MANAGEMENT DAN KOMUNIKASI

Untuk memastikan tata kelola dan management yang baik di perlombaan ketrampilan dan pengaturan komunikasi diatur sebagai berikut:

Skenario perlombaan akan diatur sebagai berikut:

a. Opening Day

- Welcome Ceremony
- Technical Briefing
 1. Explanation of Competition rules
 2. Explanation of technical description
 3. Test Project Overview Explanation
 4. Marking Schema
 5. Competitor working place's arrangement
- Familiarization
 1. Hardware PC Client & PC SERVER checking
 2. Software checking
 3. Competition working place checking

Selama kegiatan Technical Briefing, semua pendamping akan mendampingi semua peserta untuk memahami aspek teknis lomba dan pengembangan yang akan di lakukan di periode berikutnya.

Sebelum memulai setiap modul, peserta akan dijelaskan tentang soal / case yang akan di kerjakan. Semua pertanyaan akan terbuka bisa di dengar semua peserta dan semua jawaban juga akan di dengar semua peserta.

Ketika waktu mengerjakan di mulai, pertanyaan terkait soal tidak akan dijawab oleh dewan juri untuk memastikan perlombaan yang adil bagi semua peserta lomba.

b. Lomba Hari 1

No	Schedule	Activity
1.	08:00 – 08.30	Case Explanation
2.	08:30 – 11:30	Database Creation and Main Form Development
3.	11:30 – 12:30	Break and Submission
4.	12:30 – 13:00	Case Explanation
5.	13:00 – 16:00	Master Form Development

c. Lomba Hari 2

No	Schedule	Activity
1.	08:00 – 08.30	Case Explanation
2.	08:30 – 11:30	Transaction Form Development
3.	11:30 – 12:30	Break and Submission
4.	12:30 – 13:00	Case Explanation
5.	13:00 – 16:00	ERD Development

d. Lomba Hari 3

No	Schedule	Activity
1.	08:00 – 08.30	Case Explanation
2.	08:30 – 11:30	Mobile Application Development

- Peserta yang mengalami kesulitan atau ada kebutuhan khusus (seperti toilet, mengambil makanan) tidak akan mendapatkan waktu tambahan
- Peserta yang mengalami masalah dengan peralatan akan di perhitungkan oleh Juri dan mendapatkan waktu tambahan.
- Peserta yang terlambat tidak akan mendapatkan waktu tambahan untuk briefing soal maupun untuk pengerjaan.

7. PERSYARATAN KEAMANAN

- Peserta wajib menggunakan sepatu selama lomba
- Peserta diijinkan untuk membawa penutup / pelindung telinga
- Peserta dilarang membawa alat elektronik ke tempat lomba seperti HP, tablet, dll
- Peserta dilarang mengakses external storage seperti flashdisk, harddisk.
- Peserta diijinkan membawa mouse dan keyboard sendiri selama tidak memiliki komponen untuk menyimpan data atau yang dapat di program.
 - Stationary

8. ALAT

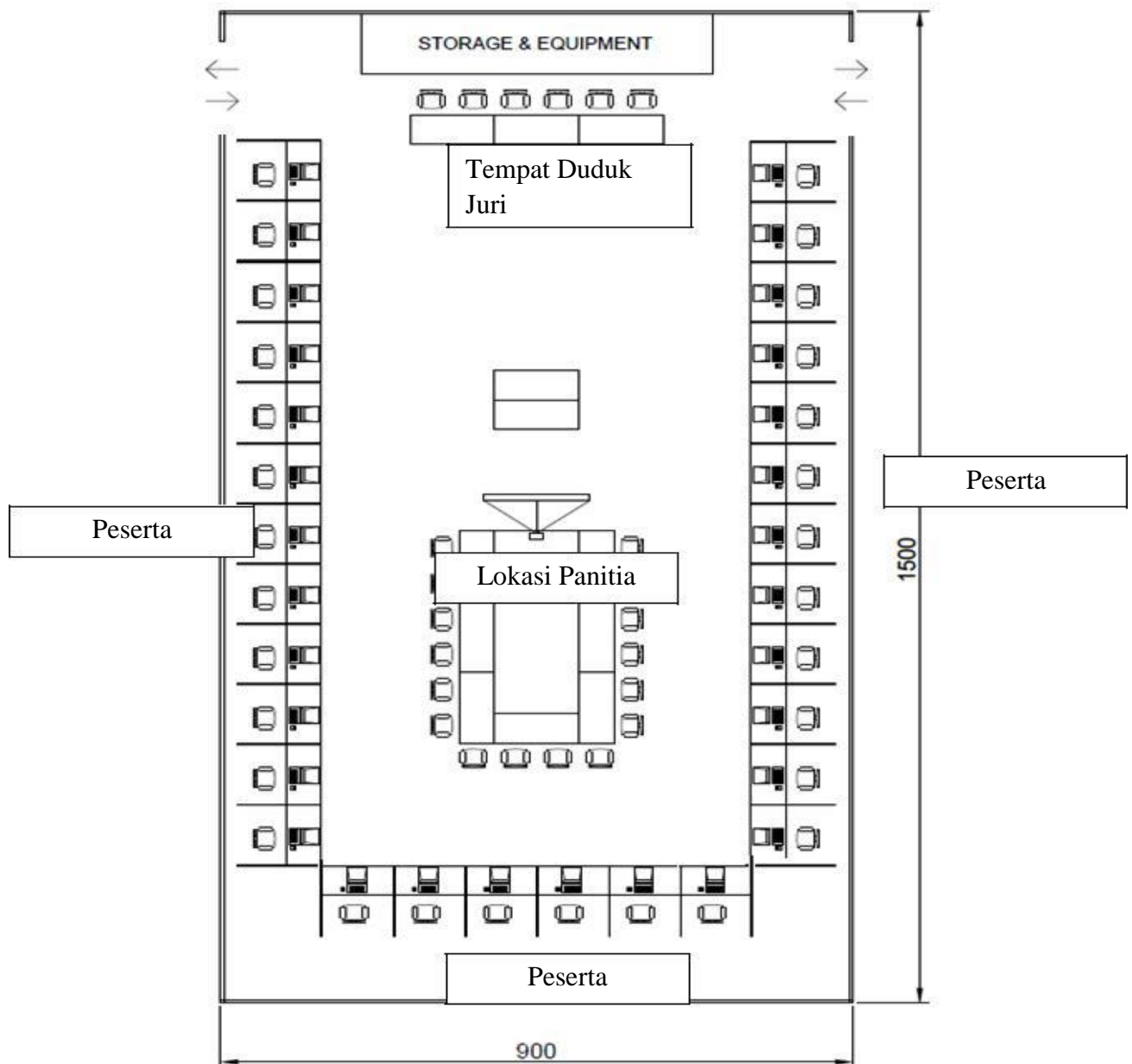
terlampir

9. BAHAN

terlampir

10. LAYOUT

LAYOUT RUANGAN LOMBA INFORMATION TECHNOLOGY / SOFTWARE APPLICATION LKS XXVI – 2018



Jakarta, 24 Oktober 2017
Penyusun 1

Tim Juri LKS 2018

11. JADWAL

a. Lomba Hari 1

No	Schedule	Activity
1.	08:00 – 08.30	Case Explanation
2.	08:30 – 11:30	Database Creation and Main Form Development
3.	11:30 – 12:30	Break and Submission
4.	12:30 – 13:00	Case Explanation
5.	13:00 – 16:00	Master Form Development

b. Lomba Hari 2

No	Schedule	Activity
1.	08:00 – 08.30	Case Explanation
2.	08:30 – 11:30	Transaction Form Development
3.	11:30 – 12:30	Break and Submission
4.	12:30 – 13:00	Case Explanation
5.	13:00 – 16:00	ERD Development

c. Lomba Hari 3

No	Schedule	Activity
1.	08:00 – 08.30	Case Explanation
2.	08:30 – 11:30	Mobile Application Development

12. PENGUNJUNG DAN MEDIA YANG DILIBATKAN

Untuk memaksimalkan keterlibatan pengunjung dan media, berikut adalah gagasan yang dipertimbangkan:

- Display Screens
- Test Project Descriptions
- Profile para peserta
- Peluang Karir

13. KEBERLANJUTAN / SUSTAINABILITY

Dalam rangka menjaga kelestarian lingkungan, hal yang diperhatikan dalam proyek uji adalah:

- Tidak menggunakan bahan yang bersifat 3B.
- Penggunaan bahan yang beracun harus ditangani secara khusus.
- Menggunakan bahan-bahan yang ramah lingkungan
- Pemakaian Proyek Uji setelah kompetisi
- Mengurangi pencetakan dengan kertas

LKS SMK
Tingkat Nasional Ke-XXVI
Tahun 2018



LKS SMK
TINGKAT NASIONAL
2018

Soal

BIDANG LOMBA

IT-Software Solution for Business



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN

DIREKTORAT JENDERAL PENDIDIKAN MENENGAH
DIREKTORAT PEMBINAAN SEKOLAH MENENGAH
KEJURUAN Kompleks Kemdiknas Gedung E Lantai 12-13
Jalan Jenderal Sudirman Senayan Jakarta 10270 Telepon
(021) 5725477 (hunting), 5725466-69, 5725471-75 Fax.

5725467, 5725469, 5725049

Site: www.ditpsmk.net

PROJECT OVERVIEW

In this Test Project, you are required to develop an information system following the requirement given on the Test Project. In general, there will be 4 project resources given to you, which is:

2. ERD and Data Dictionary for Test Project

This will be used to guide you to create the database files. Ensure that all entities created on the database are related with the given ERD, following the relationship and also the criteria in Data Dictionary for each entity!

3. Navigation Diagram for the Application

Use the Navigation Diagram to develop the form interaction inside the application. You are free to add new interaction between forms, without neglecting the defined interaction in this diagram.

4. Example Design (Wireframe) of desired Information System

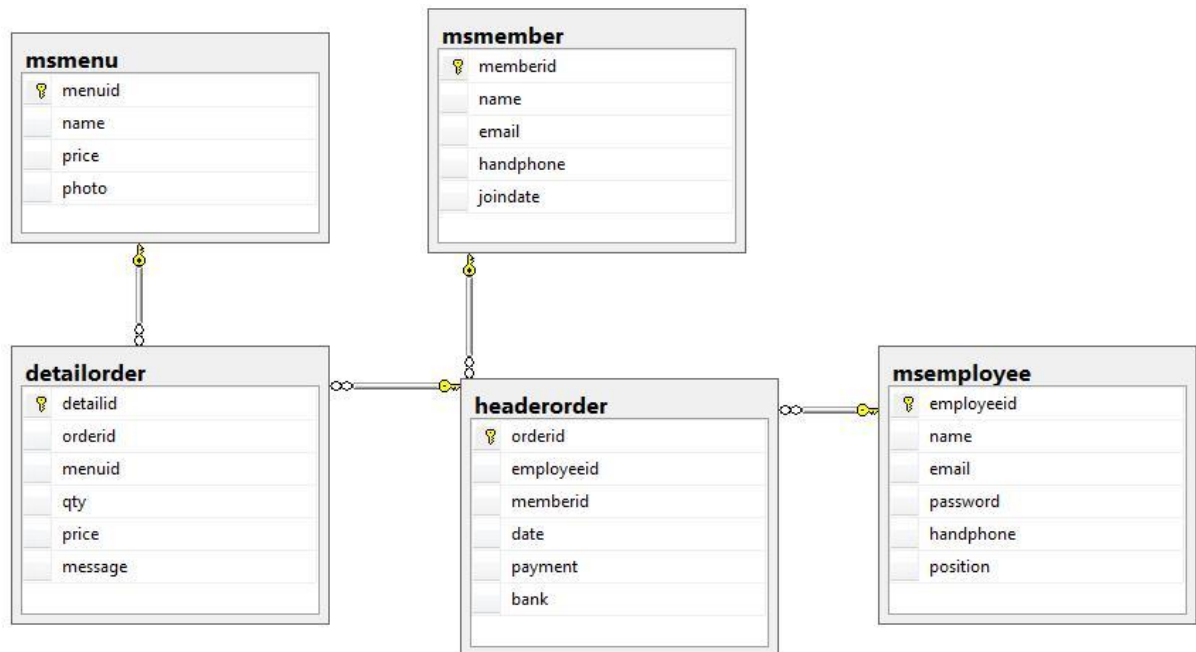
This file is used to give you design guidelines of all required forms. Please note that your form designs are not limited to these examples!

5. Data files (*if any*)

The data files will be used to support you test and develop the information system on each module. Please use this data files in the development, you are allowed to use another resources outside the given data files only if instructed in the module.

SMK NUSANTARA INFORMATION SYSTEM

ENTITY RELATIONSHIP DIAGRAM



SMK NUSANTARA INFORMATION SYSTEM

DATA DICTIONARY

Tabel	KEY	Kolom	Tipe Data	Required?	Notes
Msmenu	PK	MenuID	INTEGER	Y	Auto Increment
		Name	nVARCHAR(50)	Y	
		Price	INTEGER	Y	
		Photo	nVARCHAR(100)	Y	
Msmember	PK	MemberID	nchar(8)	Y	Auto Increment
		Name	nVARCHAR(50)	Y	
		Email	nVARCHAR(50)	Y	
		Handphone	nVARCHAR(13)	Y	
		JoinDate	Date	Y	
Msemployee	PK	EmployeeID	nchar(6)	Y	Auto Increment
		Name	nvarchar(100)	Y	
		Email	nvarchar(50)	Y	
		password	nvarchar(50)	Y	
		Handphone	nvarchar(13)	Y	
		Position	nvarchar(50)	Y	
Headerorder	PK	OrderID	nchar(10)	Y	Auto Increment
	FK	Employeeid	nchar(6)	Y	
	FK	Memberid	nchar(8)	Y	
		Date	Date	Y	
		Payment	nvarchar(50)	Y	
		bank	nvarchar(50)	Y	
Detailorder	PK	Detailid	INTEGER	Y	Auto Increment
	FK	Orderid	nchar(10)	Y	
	FK	Menuid	INTEGER	Y	
		Qty	INTEGER	Y	
		Price	INTEGER	Y	
		status	VARCHAR(10)	Y	

SMK NUSANTARA INFORMATION SYSTEM

WIREFRAME

01 Login Form



The wireframe shows a window titled "Form Login". Inside the window, the text "SMK Restaurant" is centered at the top. Below this, there are two input fields: "Email" and "Password". Below the "Password" field is a "Login" button.

02 Admin Navigation Form



The wireframe shows a window titled "FrmAdminNav". Inside the window, the text "Admin Navigation" is centered at the top. Below this, there is a welcome message "Welcome, [Admin Name]". Below the welcome message, there are five buttons arranged vertically: "Manage Employee", "Manage Menu", "Manage Member", "Change Password", and "Logout".

03 Chef Navigation Form



The screenshot shows a Windows application window titled "FrmChefNav". The window has a standard Windows title bar with minimize, maximize, and close buttons. The main content area has a light gray background. At the top, the text "Chef Navigation" is centered. Below it, the text "Welcome, [Chef Name]" is displayed. In the center, there are three buttons stacked vertically: "View Order", "Change Password", and "Logout".

04 Cashier Navigation Form



The screenshot shows a Windows application window titled "FrmCashierNav". The window has a standard Windows title bar with minimize, maximize, and close buttons. The main content area has a light gray background. At the top, the text "Cashier Navigation" is centered. Below it, the text "Welcome, [Cashier Name]" is displayed. In the center, there are three buttons stacked vertically: "Payment", "Change Password", and "Logout".

05 Manage Employee Form

FrmManageEmployee

Form Manage Employee

EmployeeId	Name	Email	Handphone	Position
1				

EmployeeId:

Name:

Email:

Handphone:

Position:

06 Manage Menu Form

FrmManageMenu

Form Manage Menu


MenuId	Name	Price
1	Kangkung Balacan	25000
2	Nasi Putih	5000
3	Gurame Asam M...	125000
4	Ayam Telur Asin	90000
5	Cumi lada garam	70000
6	Udang Mayonaise	80000

MenuId:

Name:

Price:

Photo:



07 Manage Member Form

Form Manage Member

	MemberId	Name	Email	JoinDate
»				

MemberId

Name

Email

08 Change Password Form

Form Change Password

Old Password


New Password

Confirm Password

09 Order Form

Form Order

	Menu	Price
	Kangkung Balacan	25000
	Nasi Putih	5000
	Gurame Asam Manis	125000
▶	Ayam Telur Asin	90000
	Cumi lada garam	70000
	Udang Mayonaise	80000

 Menu Name: Ayam Telur Asin
Qty: 2
Price: 90000

	Menu	Qty	Price	Total
▶	Udang Mayonaise	1	80000	80000
*				

Total : 80000

10 View Order Form

Form View Order

Order Id: 2017010001

	Menu	Qty	Action
✎	Kangkung Balacan	2	Cooking
	Nasi Putih	6	Deliver
	Gurame Asam M...	1	Cooking
	Ayam Telur Asin	2	Pending
*			

11 Payment Form

FrmPayment

Form Payment

OrderId: 2017010001

	Menu	Qty	Price	Total
	Ayam Telur Asin	2	90000	180000
	Gurame Asam Manis	1	125000	125000
▶	Kangkung Balacan	2	25000	50000
	Nasi Putih	6	5000	30000

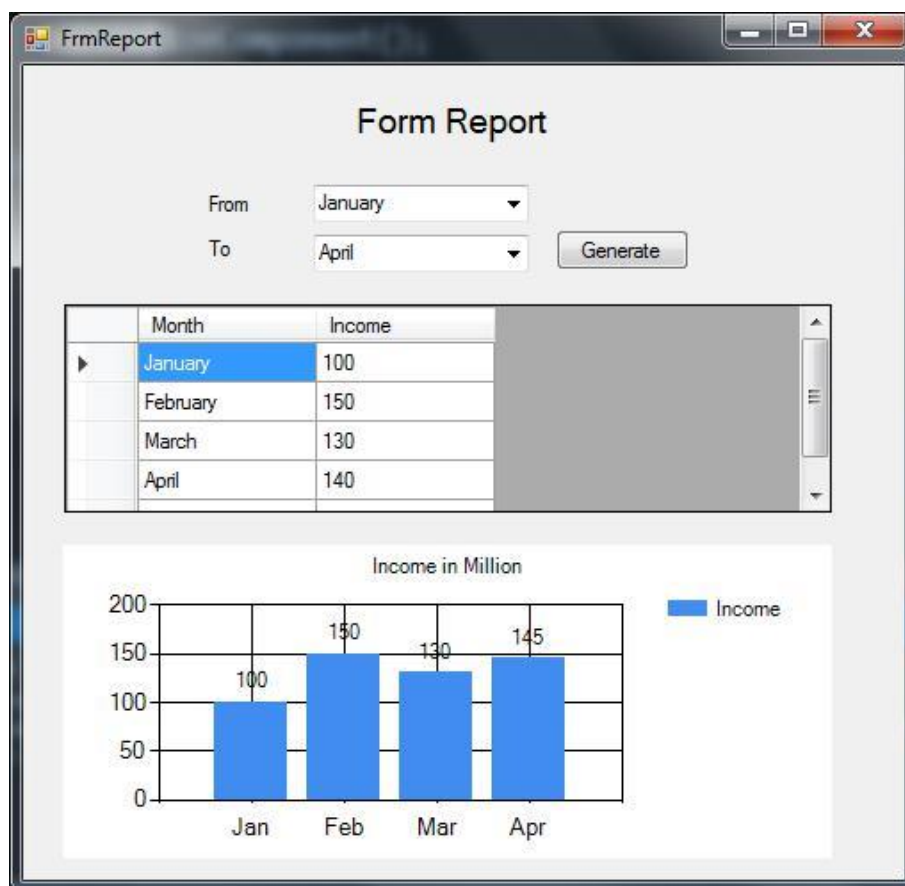
Total : 385.000,00

Payment Type: Credit Card

Card Number:

Bank Name: BNI

12 Report Form



THE DEVELOPMENT OF SMK Restaurant INFORMATION SYSTEM

SMK Restaurant is one of Indonesia famous vocational restaurant located in Malang, East Java. As the school growth, the Headmaster thinks it is the time to use Information System to support their business process for transaction process. After hiring famous consultant to analyze and design the system, it is the time to develop the system.

Based on the system design given to you, you're required to develop Information system to support the business process of transaction for SMK Restaurant. Ensure your developed solutions can accommodate SMK Restaurant business process properly, following the instruction on the project!

Module 1: Database Creation and Main Form Development

3. Create the Database

Create a database using your MS SQL Server on the local database server following the ERD and Data Dictionary given to you.

4. Insert the Data

Insert the master data given to you on file "*master-data.xlsx*" to the related table on your newly created database.

5. Create Application

Create an application using your preferred platform (C# or Visual Basic.NET).

6. Create "01 Login Form"

Create the main menu of the application as outlined in "**01 Login Form**" in the wireframe.

1. Ensure all field must be filled.
2. Ensure Email and password must be existed in database

7. Create "02 Admin Navigation Form"

Create the main menu of the application as outlined in "**02 Admin Navigation Form**" in the wireframe.

1. Ensure this form just can be accessed by Admin

5. Create “03 Chef Navigation Form”

Create the main menu of the application as outlined in “03 Chef Navigation Form” in the wireframe.

- ☐ Ensure this form just can be accessed by Chef

6. Create “04 Cashier Navigation Form”

Create the main menu of the application as outlined in “04 Cashier Navigation Form” in the wireframe.

- ☐ Ensure this form just can be accessed by Cashier

7. Create “08 Change Password Form”

Create the main menu of the application as outlined in “08 Change Password Form” in the wireframe.

- ☐ Ensure old password input correctly
- ☐ Ensure confirm password must be same with new password
- ☐ Ensure new password must be contains uppercase, lowercase and number.

Module 2: Master Form Development

6. Create “05 Manage Employee Form”

Create the main menu of the application as outlined in “05 Manage Employee Form” in the wireframe.

- α. Ensure display all Employee data stored inside the database
- β. Ensure all data are filled before adding or updating the data.
- χ. Ensure EmployeeID auto generated correctly.
- δ. The Add New, Edit Data, and Delete Data button are functioned correctly.
- ε. As for Save and Cancel button, it only enabled when the user choose to Edit the Data, and should be on the proper state, if the user are editing the data cancel button should cancel the edited data.

7. Create “06 Manage Menu Form”

Create the main menu of the application as outlined in “06 Manage Menu Form” in the wireframe.

- α. Ensure the form can display all Menu data stored inside the database
- β. Ensure all data are filled before adding or updating the data.
- χ. The Add Data, Edit Data, and Delete Data button are functioned correctly.
- δ. As for Save and Cancel button, it only enabled when the user choose to Edit the Data, and should be on the proper state, if the user are editing the data cancel button should cancel the edited data.

2 Create “07 Manage Member Form”

Create the main menu of the application as outlined in “07 Manage Member Form” in the wireframe.

- χ. Ensure the form can list all Member data stored inside the database
- δ. Ensure all data are filled before adding or updating the data.
- ε. The Add Data, Edit Data, and Delete Data button are functioned correctly.
- φ. As for Save and Cancel button, it only enabled when the user choose to Edit the Data, and should be on the proper state, if the user are editing the data cancel button should cancel the edited data.

Module 3: Transaction Form Development

7. Create “09 Order Form”

Create the main menu of the application as outlined in “**09 Order Form**” in the wireframe.

- ☐ Ensure all menu display in this form.
- ☐ Ensure user can add and remove selected menu.

8. Create “10 View Order Form”

Create the main menu of the application as outlined in “**10 View Order Form**” in the wireframe.

- ☐ Ensure the form can list all order that not finish yet
- ☐ Ensure chef can change status every menu

9. Create “11 Payment Form”

Create the main menu of the application as outlined in “**11 Payment Form**” in the wireframe.

- ☐ Ensure the form can list all order that not finish yet
- ☐ Ensure all data inputted correctly before saving the data.

b. Create “12 Report Form”

Create the main menu of the application as outlined in “**12 Report Form**” in the wireframe.

Module 4: Database Development

SMK Restaurant is going to continue the development of their Information System to support another business process of the Restaurant.

This new feature is used to give more information to people about food in this restaurant. Every guest can give their review and rating about food that they ordered. In this feature, people also can upload their picture about their ordered food. Every user can see menu picture, rating and review that made by user before.

Another thing to analyze, SMK Restaurant want to make party package that consist of some menu that already existed. For example, silver package consist of 2 meat menu and 2 vegetables menu. gold package is consist of 2 meat menu and 3 vegetables. Diamond package is consist of 3 meat menu and 3 vegetables. Every package have different price and have minimum order of 100 portions.

As an analyst, you are asked for create table and give example data minimum 5 data per table in SQL Server 2014 to support all system that needed in SMK Restaurant Review.

Module 5: Mobile Application Development

- **Create “Mobile Application”**

Create Application based on your Database.

Ensure your application can handle all business process in SMK

Restaurant Review

The application must connect with your database that you have made in

module 4.

Make Form Validation that needed in your application, for an example “all data must be filled”