



DATABASES

GS WEB APPLICATION DEVELOPMENT

Teacher: Vanesa Maldonado Guerrero
Curs 2025/26

Unit 1. Introduction to Databases

What is Data?

Information Processing

Decision Making Based on Information

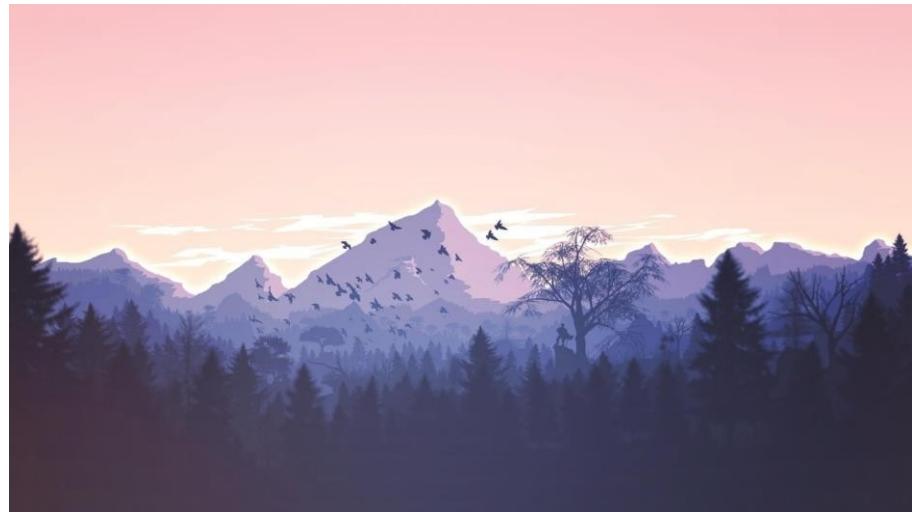
What is an Information System?

What is a Database?

What is a Database Manager?

Requirements Analysis

Design Process



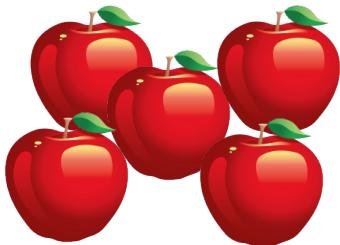
What is a Data?

Symbolic representation

It can be any element or fact used to describe or characterize something.



What is a Data?



5

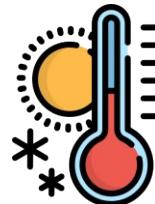
A large, three-dimensional purple number '5' centered on the page.

What is a Data?

We have two types of data:

❖ Quantitative Data

They represent numerical quantities and are measurable.



❖ Qualitative Data

They describe qualities or characteristics and are not necessarily numerical.



What is a Data?

❖ Personal Data (any)

Luisa

12/11/2020

GABRIel

12-34-56-78

❖ Statistical Data

18%

80%

30%

❖ Numeric Data or Symbol

5

E

@

What is a Data?

Wikipedia:

A data point is a symbolic representation of a quantitative or qualitative attribute or variable.

Number, Color, Object, Shape, etc.

They can be measured with numbers

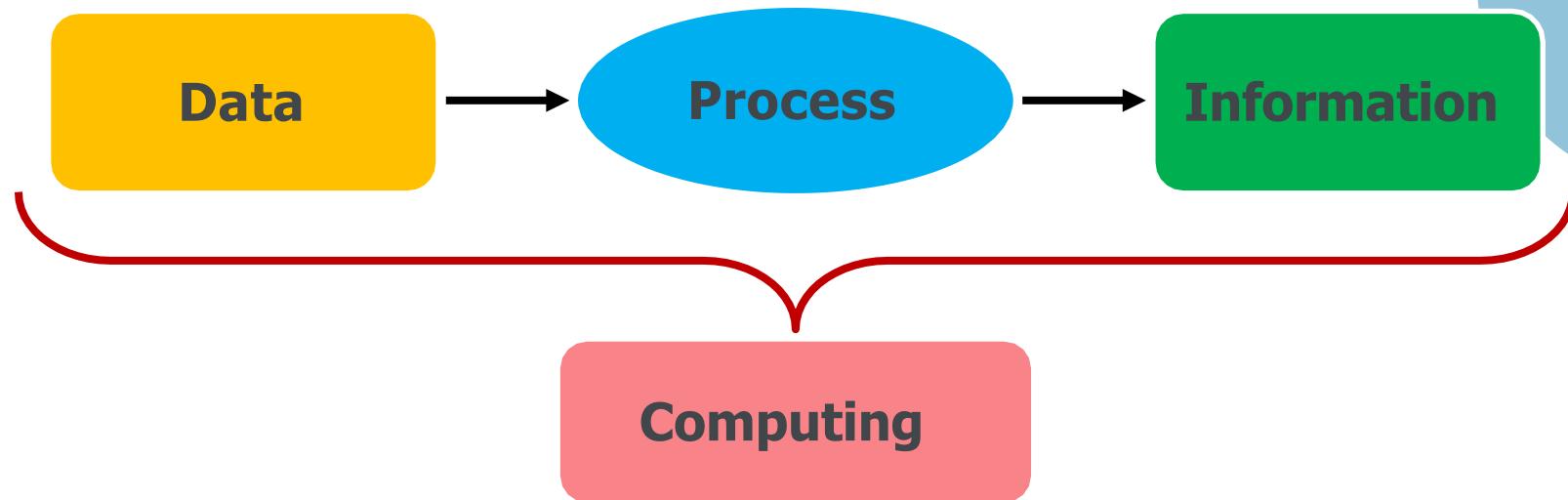
They describe qualities or characteristics.

Information Processing

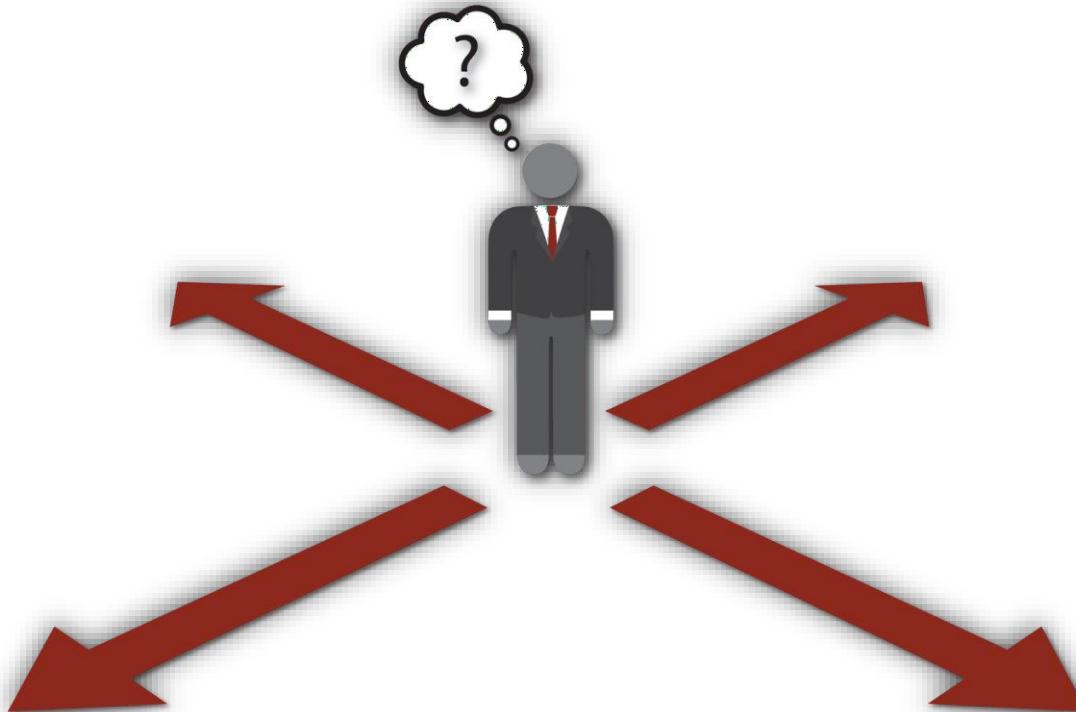
In order to generate information, we need a set of data and must assign meaning to that data.



Information Processing



Decision Making Based on Information



Decision Making Based on Information

Information

Data



Decision Making Based on Information

Concrete facts

Data

**What does the term
'data-driven' mean?**

Identify Patterns

Make decisions without bias or emotion

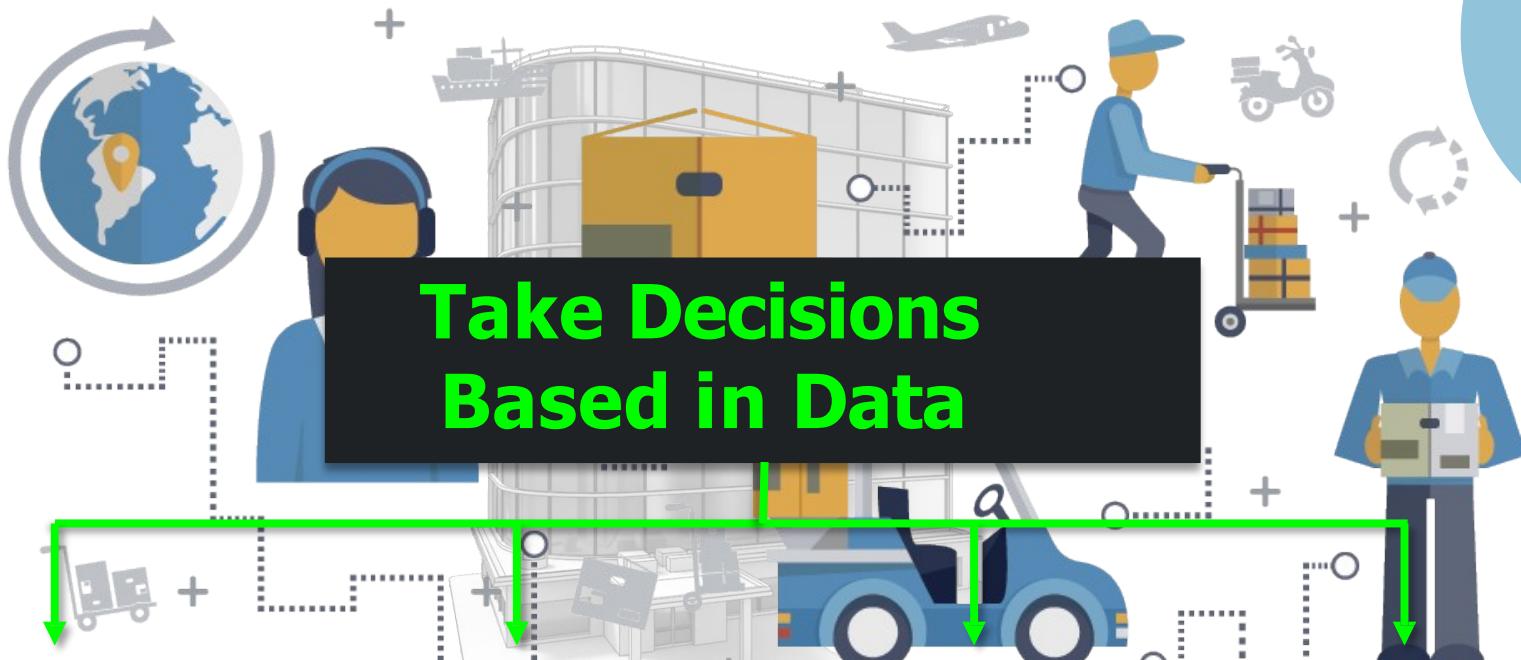
Decision Making Based on Information



Decision Making Based on Information



Decision Making Based on Information



**Improvement of
the efficiency**

**Reduction of
costs**

**On-time
delivery**

**Greater
visibility**

What is an Information System?

Collect

Store

Process

Transmit

**A system is an organized set
of interconnected elements or
components**

Retrieve

Decision-making

Operations
management

Execution of
specific tasks

What is an Information System?

**The key components of an
Information System are:**

Data Entry

Data Processing

Data Storage

**Retrieval and
Query**

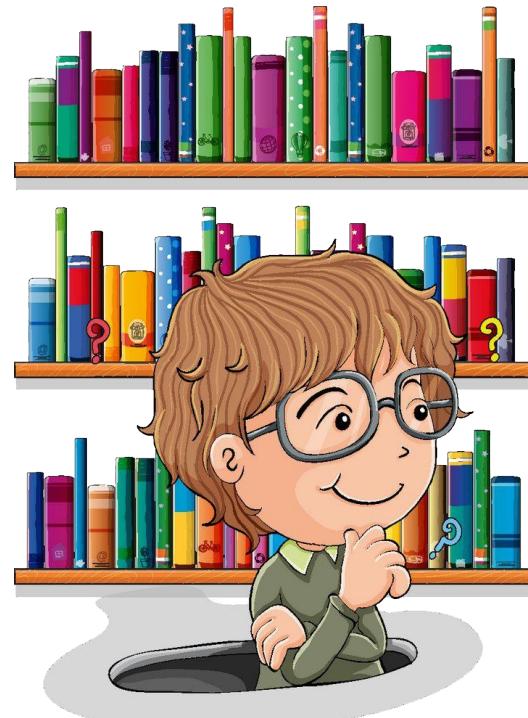
**Output of
Information**

**Control and
Security**

What is a DataBase?

**A collection of data stored for
systematic consultation**

What is a DataBase?



What is a DataBase?

	Código:	Nombre:	Correo:	Edad:	Ciudad:	Medio de contacto:
4	A001	Abigail Saavedra	abi.saavedra@gmail.com	23	Montevideo	Correo
5	A002	Alberto Cervas	beto79cervas@gmail.com	60	Méjico	Facebook
6	A003	Gabriela Duarte	gaby_du@gmail.com	58	Madrid	Facebook
7	A004	Fernando Suárez	fersuia@gmail.com	20	Saltillo	Instagram
8	A005	Hugo Méndez	hugo_mdz@gmail.com	45	Buenos Aires	Sitio web
9	A006	Hilda Gonzales	hilida564654@gmail.com	28	Quebec	Correo
10	A007	Esteban Salgado	salgado_e@gmail.com	42	Belmopán	WhatsApp
11	A008	Monse Jara	moonse@gmail.com	19	Brasilia	Correo
12	A009	Arely Pérez	arelyarey@gmail.com	33	Guatemala	Facebook
13	A010	Tania Delgadillo	tandleg45@gmail.com	24	Barcelona	Facebook
14	A011	Fátima Drexler	dramafat@gmail.com	52	Managua	Instagram
15	A012	Isabel Portilla	chabela@mat.com	36	Panamá	Sitio web
16	A013	Eric Villareal	villeric@gmail.com	24	Asunción	Correo
17	A014	Karen Mortera	karen.mortera@gmail.com	44	Lima	Facebook
18	A015	Clara Tapia	clarata78@gmail.com	48	Méjico	Correo
19	A016	Oscar Lazo	osc.lazo@gmail.com	31	Quebec	Correo
20	A017	José Granillo	pepe_gr@gmail.com	27	Madrid	Correo
21	A018	Ana Sofia Morales	ansofimora@gmail.com	20	Guatemala	Facebook
22	A019	Brenda Coiales	brendco9543@gmail.com	55	Saltillo	Facebook
23	A020	Israel Colunga	isamesd@gmail.com	49	Méjico	Instagram
24	A021	Aura Gascón	gasccon_aura@gmail.com	43	Buenos Aires	Sitio web

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Hotel	Precio	Región	Habitaciones	Fundación	Gerente
Villa Purificación	\$1,200	Norte	28	10/07/2014	Isabel Perez
Quitupan	\$500	Oeste	36	27/12/2013	Humberto Macias
El Salto	\$1,500	Este	26	28/09/2013	Ramon Hinojosa
San Cristóbal	\$900	Norte	30	01/11/2013	Eriwan Calderón
San Diego de Alejandría	\$1,500	Norte	24	31/10/2013	Roberto Cortes
San Juan de los Lagos	\$400	Sur	33	16/06/2014	Carlos Cedeño
San Julián	\$9,000	Este	21	21/11/2013	Eduardo Mancillas
San Marcos	\$1,200	Sur	20	23/11/2014	Mariana Ramirez
San Martín de Bolaños	\$500	Norte	43	25/01/2013	Alejandra Sanchez
San Martín Hidalgo	\$1,200	Norte	23	09/11/2014	Sofia Larios
San Miguel el Alto	\$1,200	Oeste	25	22/11/2013	Eduardo Corona
Gómez Fariás	\$1,200	Oeste	23	05/12/2013	Luis Lopez
San Sebastián del Oeste	\$1,500	Oeste	22	16/11/2014	Ana Gonzalez
Santa María de los Ángeles	\$1,300	Este	36	26/03/2014	Mario Avila
Sayula	\$900	Este	36	Nayeli Parraga	

NIT_CLIENTE	NOMBRE_O_RAZON_SOCIAL	CLASIFICACION	FECHA	DEUDA_PENDIENTE	Deuda pendiente 2010	Total
680547789-4	Aseo y Vigilancia Ltda	Jurídica	29/08/2011	\$ 354.000	\$ 25.000	\$ 379.000
79411502	Carlos Suárez	Natural	12/07/2011	\$ 1.250.000	\$ 150.000	\$ 1.400.000
79456616	Richard Arias	Natural	26/05/2011	\$ 870.550	\$ 115.000	\$ 985.550
80125468	Lucía Fandino	Natural	09/04/2011	\$ 17.500	\$ 49.000	\$ 66.500
830047047-1	CompuLimitada	Jurídica	21/02/2011	\$ 283.400	\$ 5.750	\$ 289.150
830057288-1	Compu Arrienda Ltda	Jurídica	05/01/2011	\$ 550.000	\$ 2.550	\$ 552.550
830654987-5	Sumi - Oficina Ltda	Jurídica	18/11/2011	\$ 228.000	\$ 26.700	\$ 254.700
832987456-8	Consúltenos Ltda	Natural	02/10/2011	\$ 3.450.000	\$ 56.700	\$ 3.506.700
88266881	Pedro Miranda	Natural	16/08/2011	\$ 21.000	\$ 81.900	\$ 102.900
13879670	Sergio Estuphan	Natural	30/06/2011	\$ 20.000	\$ 15.600	\$ 355.600
37123659	Sandra Margarita Contreras	Natural	27/02/2011	\$ 37.500	\$	\$ 37.500

What is a Database Manager?

Database Management System (DBMS)

Creation

Modification

Storage

Management

Recovery

Efficiency
and Safety

What is a Database Manager?



What is a Database Manager?

Creation of DataBases

Optimizing Consultations

Data Insertion and Update

Backups and Recovery

Data Recovery

**Concurrency and
Transaction Control**

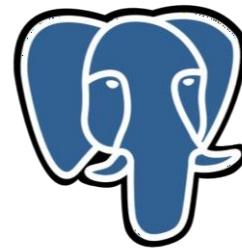
**User and Security
Management**

Replication and Scalability

Data Integrity

SQL Language Support

What is a Database Manager?



Requirements Analysis

To carry out a requirements analysis, it is necessary to have the requirements available in order to begin designing the database .



Requirements analysis can be conducted through :

Interview with the stakeholders

Analyze invoices, records, and forms

Examine existing data systems

NIT_CLIENTE	NOMBRE_O_RAZON_SOCIAL	CLASIFICACION	FECHA	DEUDA_PENDIENTE	Deuda pend.
1 2 680547789-4	Aseo y Vigilancia Ltda	Jurídica	29/08/2011	\$ 354.000	\$
3 79411502	Carlos Suárez	Natural	12/07/2011	\$ 1.250.000	\$
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7 830057288-1	Compu Arrienda Ltda	Jurídica	05/01/2011	\$ 550.000	\$
8 830654987-5	Sumi - Oficina Ltda	Jurídica			
9 Código: Nombre: Correo: Edad: Ciudad: Medio de contacto:					
10 A001 Abigail Saavedra abis.saavedra@gmail.com 23 Montevideo Correo					
11 A002 Alberto Cervas beto7cervas@gmail.com 60 México Facebook					
12 A003 Gabriela Duarte gabr_du@gmail.com 58 Madrid Facebook					
13 A004 Fernando Suarez fernusa@gmail.com 20 Saltillo Instagram					
14 A005 Hugo Mendez hugo.mdr@gmail.com 45 Buenos Aires Sitio web					
15 A006 Hilda Gonzales hildag556456@gmail.com 28 Quebec Correo					
16 A007 Esteban Salgado salgado.e@gmail.com 42 Belmopán WhatsApp					
17 A008 Monse Jara monsse@gmail.com 19 Brasilia Correo					
18 A009 Arey Pérez areyptre@gmail.com 33 Guatemala Facebook					
19 A010 Tania Delgadillo tanieldg95@gmail.com 24 Barcelona Facebook					
20 A011 Fátima Drexler dramafat@gmail.com 52 Managua Instagram					
21 A012 Isabel Portillo chabela@gmail.com 36 Panamá Sitio web					
22 A013 Eric Villarreal villareal_e@gmail.com 24 Asunción Correo					
23 A014 Karen Mortero karen_mortero@gmailmail.com 44 Lima Facebook					
24 A015 Clara Tapia clarat7tpe@gmail.com 48 México Correo					
25 A016 Oscar Lazo osc.lazo@gmail.com 31 Quebec Correo					
26 A017 José Granillo pegas_grs@gmail.com 27 Madrid Correo					
27 A018 Ana Sofía Morales ansimofora@gmail.com 20 Guatemala Facebook					
28 A019 Brenda Corales brenco89543@gmail.com 55 Saltillo Facebook					
29 A020 Israel Colunga isamestd@gmail.com 49 México Instagram					
30 A021 Aura Gascón gason_aura@gmail.com 43 Buenos Aires Sitio web					

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4	4 08/01/2022	GUIA245	FACTU698	11.333.777-5	Empresa cual Costo Financiero	El Salto	Otro detalle ;	3.00
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19	20 07/14/2022	GUIA456	FACTURA789	66.333.555-4	Primera	El Salto	Carne	25.00

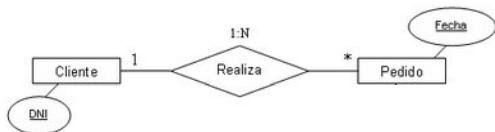
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		Sur	20	23/11/2014	Mariana Ramirez
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		Norte	43	25/04/2013	Sofia Larios
		Norte	23	09/11/2014	Eduardo Corona
		Oeste	25	22/11/2013	Luis Lopez
		Oeste	23	05/12/2013	Ana Gonzalez
		Este	22	16/11/2014	Mario Avila
		Este	36	26/03/2014	Nayeli Parraga

Design Process

1

Conceptual Design

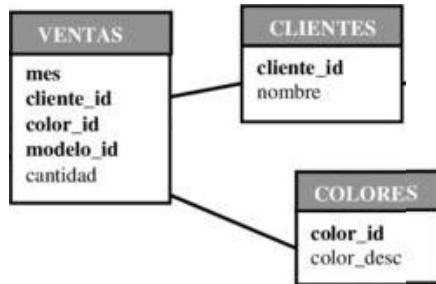
Initial and high-level phase in the database development process. In this stage, an abstract representation and organization of the data is created.



2

Logical Design

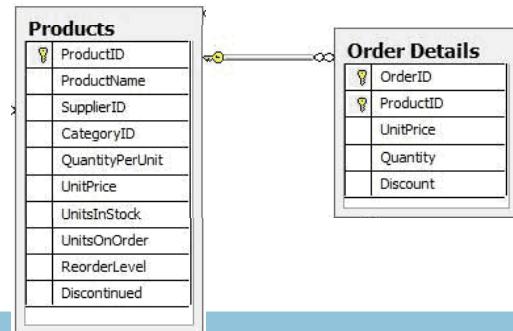
It is a crucial stage in the database development process after completing the conceptual design. In this phase, the concepts and overall structure defined in the conceptual design are translated



3

Physical Design

It is the phase in which the previously developed logical design is translated into a specific technical model that is adapted to the hardware platform and the database management system (DBMS).



Design Process

	Type DBMS	Software DBMS
Design Conceptual	NO	NO
Design Logical	YES	NO
Design Physical	YES	YES



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D A T A B A S E

