

SALESFORCE

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Salesforce - Cloud computing

Product

(System Administrative Process)

CRM - Customer Relationship Management

- Requirements for building a company →
- Appropriate infrastructure for Product development
- Employee Platform (C, C++) for Product dev
- Scalability according to requirement analysis

AWS - Amazon Web Services

IaaS - Infrastructure as a service

on internet.

- * → The term clouds refers to a network & computing refers to access resources / network / servers / services / storage / application
- Access resources remotely over the internet cloud computing
- No one knows in which server the data is stored in AWS server that is why it is called cloud.

Company Name, logo, gmail.com

- When there was no cloud then things were difficult. For SAP each company needed to first contact Oracle and then acc. to client req. SAP was provided - this was not even Scalable. This problem was acknowledged by Mark Benioff
- Jeff Bezos (Amazon) started by e-commerce and internally was developing cloud computing concept

AWS (Amazon Web Services)

Servers of facebook are kept in ~~Antarctica~~ mining over multiple servers.

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- He built infrastructure and put it over the internet
- He provided tenant based services where resources were accessed by paying as per the requirement module of client. This improved scalability of system acc. to customer traffic, etc.

Basic pre-requisite of cloud computing

- a server for hosting
- database (of client) for storing data
- software for user interface (a platform)
- an expert to configure all of this together

[for the servers to run continuously, a cold environment is required which costs a lot of power]
That is why facebook servers are kept in Antarctica

Benefits of Cloud Computing

- Scalability
- lower cost - instead of establishing in-house servers, accessing servers over cloud as tenants is less costly
- Cloud is highly secure because no one knows where your data is, i.e., either on Antarctic server, Arizona server, etc.
- Cloud has better performance and speed.
- As compared to local server, cloud is less complex.

Use of Cloud Computing - !

It is the use of remote servers on the internet to store, manage and process data

Cloud Service Model

- 1) IaaS - Eg - aws, google cloud service
- 2) PaaS - platform which is customizable by the customer according to his/her usage. Eg - microsoft azure, salesforce

3) SaaS - ~~eg. zomato~~ ~~the software runs on the cloud platform~~
~~Customer relationship management (CRM)~~

Process or methodology used to learn more about customer's needs and behaviour in order to develop stronger relationships with them. This technology allows users to manage relationships with their customers and track data related to all of their interactions based on the demand generated.

Salesforce always follows Multi-Tenant Architecture

Giving multiple clients access to all the resources by a given login id

Meta data architecture of Salesforce

Metadata - data of data.

Salesforce's data include which there is organisation's/clients data. This data is running on a web browser.

Model view controller Architecture of Salesforce

MVC is a soft. architecture pattern which seperated the representation of information from the user's interaction.

Object is tables object is called class in C++

controller controls the database

Salesforce - releases 3 instance in a year.

Appstore

- Salesforce has an appstore called - AppExchange
- Apps available on any appstore (like play store) is third party apps
- In App-exchange where third party application are available for free as well as ~~free~~ subscription.

Salesforce - web based system

Learn more in coming 22

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- Salesforce has its own developing programming language for building complex logic environment as required called Apex (MAS) (Java script & JavaScript compatible)
- Salesforce has its own developed custom UI building language called Visual force for showing front-end.
- It also launched a component based framework called lightning (HTML, CSS, JS, Jquery, AngularJS, React.js)
- In 2016, Salesforce launched its AI based tools called Salesforce Einstein which can be used by developers and admins to add intelligence to existing CRM features.
- Salesforce released new features to the cloud CRM through 3 different release every year. The releases are known as - winter release, spring release and summer release.

Life Skills

$$n^{\text{th}} \text{ term} = a + (n-1)d$$

$$n^{\text{th}} \text{ term from the last} = l - (n-1)d$$

$a \rightarrow$ first term, $l \rightarrow$ last term

Geometric Series :-

$T_1, T_2, T_3, \dots, T_n$ are in G.P

$$\text{If } \frac{T_2}{T_1} = \frac{T_3}{T_2} = \frac{T_4}{T_3} = \dots = T_n = r$$

$$T_2 = r T_1$$

$$T_3 = r T_2 = r^2 T_1$$

$$T_4 = T_1 r^3$$

$$T_n = T_1 r^{n-1}$$

$$S_n = a(r^n - 1), r > 1$$

$$S_n = \frac{a(1-r^n)}{1-r}, r < 1$$

L.C.M and H.C.F :-

$$69 = 3 \times 23$$

$$79 = 79$$

$$239 = 239$$

$$\text{H.C.F} = 1 \rightarrow \text{divides all } 69, 79, 239$$

$$\text{L.C.M} = 3 \times 23 \times 79 \times 239 \rightarrow \text{divisible by } 69, 79, 239$$

For two no. a & b :-

$$\text{H.C.F} \times \text{L.C.M} = a \times b$$

Q- Find H.C.F of 513, 1134 and 1215

$$\begin{array}{r} 1134 \) 1215 \\ \textcircled{-} 1134 \\ 81 \) 1134 \\ \textcircled{-} 81 \\ 324 \\ \textcircled{-} 324 \\ 0 \end{array}$$

H.C.F of 1134 and 1215 is 81

$$\begin{array}{r} 81 \) 513 \) 6 \\ \textcircled{-} 486 \\ 27 \) 81 \) 3 \\ \textcircled{-} 81 \\ 0 \end{array}$$

H.C.F of 1134, 1215, 513 is 27

Q- Find L.C.M of 16, 24, 36, 54

$$\begin{array}{r} 2 | 16, 24, 36, 54 \\ 2 | 8, 12, 18, 27 \\ 2 | 4, 6, 9, 27 \\ 2 | 2, 3, 9, 27 \\ 3 | 1, 3, 9, 27 \\ 3 | 1, 1, 3, 27 \\ 3 | 1, 1, 1, 27 \\ 1, 1, 1, 1 \end{array}$$

$$\text{L.C.M} = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 432$$

Number system



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Type-1:

H.C.F of fraction = H.C.F of numerators
L.C.M of denominators

Q- Find H.C.F of $\frac{2}{3}, \frac{8}{9}, \frac{16}{8}, \frac{10}{27}$

$$2 = 2$$

$$8 = 2 \times 2 \times 2$$

$$16 = 2 \times 2 \times 2 \times 2$$

$$10 = 2 \times 5$$

$$\text{H.C.F} = 2 \times 2 \times 2 \times 2 \times 5 = 80$$

$$\text{H.C.F} = 2$$

$$\text{L.C.M} = 2^4 \times 5 = 80$$

$$3 = 3$$

$$9 = 3 \times 3$$

$$8 = 2 \times 2 \times 2$$

$$27 = 3 \times 3 \times 3$$

$$\text{L.C.M} = 3 \times 3 \times 3 \times 2 \times 2 \times 2 = 216$$

$$\text{H.C.F} = 1$$

$$\therefore \text{H.C.F} = \frac{2}{216} = \frac{1}{108} = 2$$

L.C.M of fraction = L.C.M of Numerator
H.C.F of denominators

$$\text{L.C.M} = \frac{80}{1} = 80$$

$$\begin{array}{r} 27 \times 8 \\ \hline 2 | 3 \quad 9 \quad 8 \quad 27 \\ 3 | 1 \quad 3 \quad 8 \quad 9 \\ 3 | 1 \quad 1 \quad 8 \quad 3 \\ 2 | 1 \quad 1 \quad 2 \quad 1 \\ 2 | 1 \quad 1 \quad 4 \quad 1 \\ 2 | 1 \quad 1 \quad 2 \quad 1 \\ \hline & & 1 & 1 \end{array}$$

$$\begin{array}{r} 2 | 2, 8, 16, 10 \\ 2 | 1 \quad 4 \quad 8 \quad 5 \\ 2 | 1 \quad 2 \quad 4 \quad 5 \\ 2 | 1 \quad 1 \quad 2 \quad 5 \\ 5 | 1 \quad 1 \quad 1 \quad 5 \\ \hline & & 1 & 1 \end{array}$$

~~Notes taken~~

9/10/2019

Python (1991) was created by - Guido Von Rossum

Python - easy to maintain, python is free and open source

Features of Python :-

- Simple
- easy to learn
- versatile (wide range of application)
- free and open source
- high level language
- interactive
- portable - can be used at different places at the same time
- object-oriented
- interpreted (not a compiler based language)
- dynamic
- extensible
- embeddable -
- extensive libraries
- easy maintenance
- secure
- robust
- multi-threaded
- garbage collection - at runtime all the data which is not useful is discarded

Limitations of python :-

- parallel processing can be done in python but not as elegantly as done in other languages like javascript
- being an interpreted lang., python is slow as compared to C or C++
- it lacks true multithreaded support. (has problem in process switching)
- it has very limited commercial support

(a) is read-only. It makes a local variable.

Literals :-

Literals is a raw data given in ~~var~~ a variable or constant.

Types :-

1.) Numeric literals

2.) String literals

3.) Boolean literals

4.) Special literals (none characters) [null]

→ Numeric literals - immutable i.e cannot be changed.

(i) int (ii) float (iii) complex

→ String literals - sequence of characters surrounded by quotes → ' ', " ", " " " " → triple quote or multiple quotes.

→ Boolean literal - true / false , 1/0

→ Special literal - none

Mutable and Immutable

→ list, dictionary, set, user defined classes - mutable

→ int, float, decimal, bool, string, tuple, range - immutable

Datatypes :- (8 datatypes)

None - variable having no value

Numeric - int, float, complex, bool

Set

String

List

Tuple

Range

Dictionary

Values are given in a sequence.

Sequence

mutable and ordered collection of items

* list is always written in square bracket

* set = { } → mutable and unordered collection of items
| easy to add & delete item

* tuple = () → immutable and ordered

* string = " " or [] → immutable & ordered

* range = ()

* dictionary → key & key value
| can be repeated.
unique not unique

{ 'ncha' : 'Samsung', 'lab' : 'iphone' }

DBMS

Every table is called relation
row → tuple

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Database - collection of information is database

- * DBMS is a collection of inter-related data & set of programs to access those data.

In Banking System - : Customer - name

Account

name

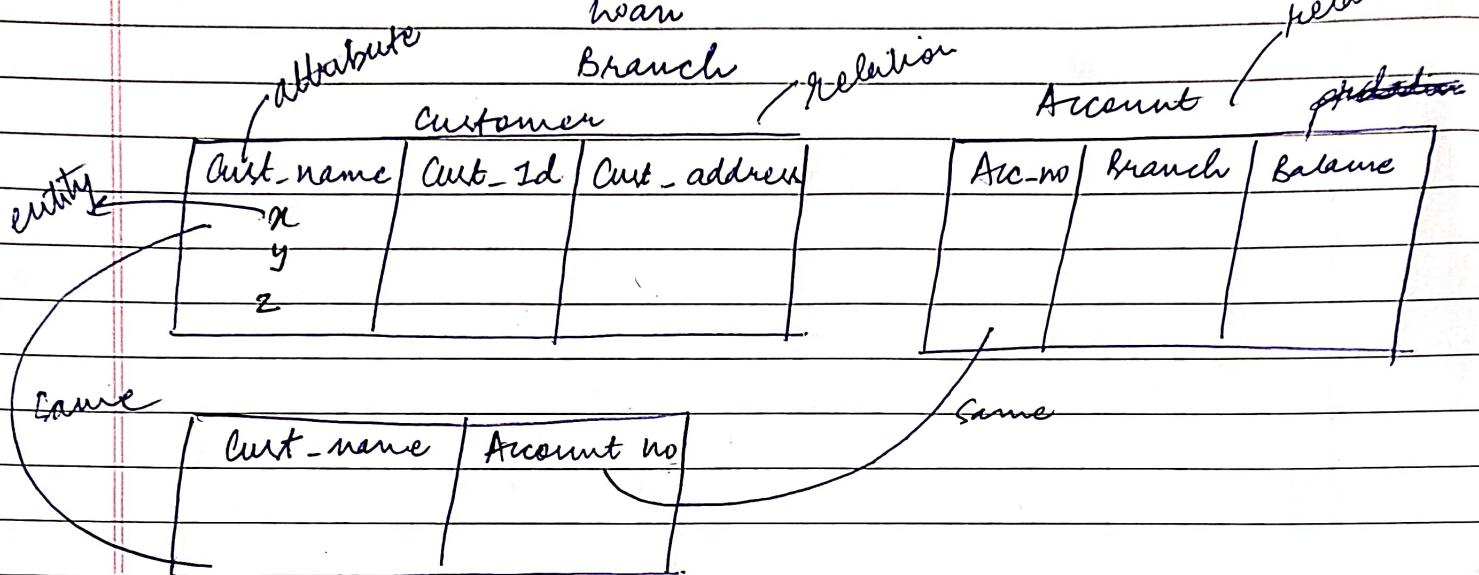
Branch

relation

Account

relation

relation



- * Normalization - converting or splitting of data and converting into standard form. Six types of normalization -:
 - 1.) 1NF - in every tuple's every attribute has a single entry
 - 2.) 2NF
 - 3.) 3NF
 - 4.) BCNF - Boyce Codd Normal Form
 - 5.) 4NF
 - 6.) 5NF

- * Redundancy - copy of data
 - ↳ to reduce it normalization is used

Data Models design

→ E-R data model

Entity - Relation

↳ real world object

To obtain inter-related data, first the data needs to be converted into normal form and then by the help of entity relationship model inter-related data is obtained.

DBMS

~~DATA → Standardized & organized form of existing data's~~

- * A Data Base Management System is a collection of inter-related data and a set of programs that allow users to access and modify these data. It is a software package / system to facilitate the creation and maintenance of a computerised database.

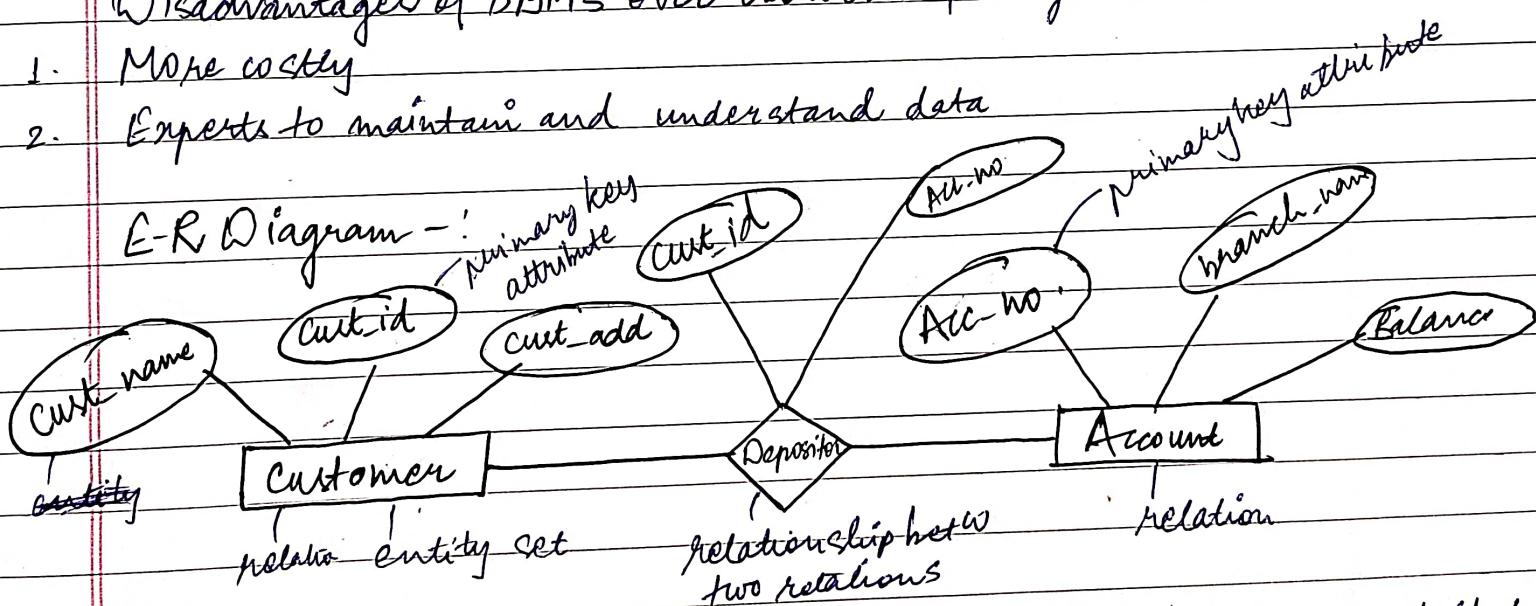
It contains information about a particular enterprise

DBMS has great advantage on file Accessing Approach as compared to traditional file maintenance because -:

1. Efficient Utilization
2. Easier retrieval of data
3. Efficient memory utilization
4. Authorization control
5. Minimum Redundancy

Disadvantages of DBMS over traditional file system -:

1. More costly
2. Experts to maintain and understand data



Primary key attribute - attribute which differentiates one attribute from another attribute

Find customer whose account balance < 1000

Customer

cut_id	Cust-name	Cust-add
1	xy	- - -
2	xz	- - -
3	zy	- - -

Acc-no	Branch	Balance
A1	-	2000
A2	-	500
A3	-	6000

Acc-no	Cust-id
A1	2
A2	1
A3	3

Answers will be initialized using `SELECT` for department-1

Initial department names inserted in database

Department

Employee

Customer

Address

Customer

Customer

Customer

Customer

Customer

Customer

Decimal - Standard Base.

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- Radix / Base - tells in which form our no. is represented
- | | | | |
|-------------|------|-----------|--|
| Binary | - 2 | (0, 1) | Eg - $(101)_2$ base or radix, $(101.01)_2$ |
| Decimal | - 10 | (0 to 9) | Eg - $(519)_{10}$, $(578)_{10}$, $(578.46)_{10}$ not a |
| Octal | - 8 | (0 to 7) | Eg - $(572.2)_8$, $(586)_8$ octal |
| Hexadecimal | - 16 | (0 to 15) | Eg - $(A43)_{16}$, $(A93.E5)_{16}$ |

$$\begin{array}{l} \text{A} = 10 \rightarrow B \\ \text{B} = 11 \rightarrow C \\ \text{C} = 12 \rightarrow D \\ \text{D} = 13 \rightarrow E \\ \text{E} = 14 \rightarrow F \end{array}$$

Conversions -

- Anybase to decimal
- Divide
- Decimal to anybase
- Divide
- Anybase to anybase

a) Anybase to decimal - :

$$(i) (A43.E5)_{16} \rightarrow (?)_{10}$$

$$(A \times 16^2 + 4 \times 16^1 + 3 \times 16^0). (E \times 16^{-1} + S \times 16^{-2})$$

$$\Rightarrow (10 \times 16^2 + 4 \times 16 + 3). \left(\frac{14}{16} + \frac{5}{16^2} \right)$$

$$\Rightarrow (2560 + 64 + 3). \left(\frac{14}{16} + \frac{5}{256} \right) = 2627 \times 0.89 = 2308.89$$

$$\Rightarrow (2627.89)_{10}$$

$$(ii) (714.23)_8 \rightarrow (?)_{10} \leftarrow (468.29)_{10}$$

$$(7 \times 8^2 + 1 \times 8^1 + 4 \times 8^0). (2 \times 8^{-1} + 3 \times 8^{-2})$$

$$\Rightarrow (448 + 8 + 4). (1/4 + 3/64)$$

$$\Rightarrow (460) \cdot 1.21 = (460.29)_{10}$$

b.) Decimal to Anybase - :

(i) $(2627.89)_{10} \rightarrow (?)_{16}$

	26.27	
16	16	10
	-16	169
	102	-16
	-16	04
	67	-0
	64	9
X	10	A
	8	-A
	0	8
	0	8

$$\begin{array}{r} 16 \longdiv{169} \\ -16 \\ \hline 10 \\ -16 \\ \hline 04 \\ -0 \\ \hline 9 \end{array}$$

$$0.89 \times 16 = 14.24 = 14-E$$

$$\rightarrow 0.24 \times 16 = 3.84 = 3-3$$

$$0.84 \times 16 = 13.4 = 13-D$$

$$\therefore (2627.89)_{10} \rightarrow (A43.E3D)_{16}$$

(ii) $(468.29)_{10} \rightarrow (?)_8$

8	468	
8	58	$(\cancel{4} + \cancel{5}) \times 8 + \cancel{8}$
1	2	$(\cancel{8} + \cancel{1}) \times 8 + \cancel{1}$
X	7	$\cancel{1}$

$$8 \longdiv{468}$$

68

-64

$$0.29 \times 8 = 2.32 = 2$$

$$0.32 \times 8 = 2.56 = 2$$

$$0.56 \times 8 = 4.48 = 4$$

$$(468.29)_{10} \rightarrow (724.224)_8$$

$$(8^2 \times 8 + 8 \times 8), (8^3 \times 8 + 8 \times 1 + 8 \times 1)$$

Q. Convert -: (i) $(1011.101)_2 \rightarrow (\)_{10} (248.1875)$

(ii) $(567.34)_{10} \rightarrow (\)_2$

$$(i) (1011.101)_2$$

$$(1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0). (1 \times 2^{-1} + 0 \times 2^{-2} + 1 \times 2^{-3}) \\ \Rightarrow (8 + 2 + 1). (1/2 + 0 + 1/8) \\ \Rightarrow (11.625)_{10}$$

$$(ii) (567.34)_{10}$$

2	567	
2	283	1
2	141	1
2	70	1
2	35	0
2	17	1
2	8	1
2	4	0
2	2	0
2	1	0
x		

$$0.34 \times 2 = 0.68 = 0$$

$$0.68 \times 2 = 1.36 = 1$$

$$0.36 \times 2 = 0.72 = 0$$

$$\therefore (567.34)_{10} = (1000110111.010)_2$$

$$0 = 2F.0 = 8 \times 2F81.0$$

$$0 = 2F.0 = 8 \times 2F8.0$$

$$1 = 2+1 = 8 \times 2F.7$$

$$1 = 2 \times 2.0$$

c) Anybase to Anybase

$$(7A6.23)_{12} \rightarrow ()_2$$

$$(7A6.23)_{12} \rightarrow ()_{10} \rightarrow ()_2$$

$$\cancel{(7 \times 12^2 + 10 \times 12^1 + 6 \times 12^0) \times (2 \times 12^{-1} + 3 \times 12^{-2})} \rightarrow (7 \times 56)$$

$$\Rightarrow (7 \times 12^2 + 10 \times 12^1 + 6 \times 12^0) \times (2 \times 12^{-1} + 3 \times 12^{-2})$$

$$\Rightarrow (7 \times 144 + 120 + 6) \times \left(\frac{1}{6} + \frac{3}{144}\right)$$

$$\Rightarrow (1134) \times (1875)$$

$$\Rightarrow (1134.1875)_{10}$$

$$(1134.1875)_{10} \rightarrow (\)_2$$

2	1134	
2	567	0.
2	283	1
2	141	1
2	70	1
2	35	0
2	17	1
2	8	1
2	4	0
2	2	0
2	1	0
x	1	

2	367	293
2	16	24
2	16	08
2	0	04
2	0	02
2	0	01

$$0.1875 \times 2 = 0.375 = 0$$

$$0.375 \times 2 = 0.75 = 0$$

$$0.75 \times 2 = 1.5 = 1$$

$$0.5 \times 2 = 1$$

$$\therefore (1134.1875)_{10} \rightarrow (100011011000011)_2$$

$$\therefore (746.23)_{10} \rightarrow (10001101100011)_2$$

$$Q-2) (11672)_8 \rightarrow (\)_{10}$$

$$(1 \times 8^4 + 1 \times 8^3 + 6 \times 8^2 + 7 \times 8^1 + 2 \times 8^0) \times (1 + 8 + 64 + 512)$$

$$\Rightarrow 4096 (5050)_{10}$$

$$(ii) (1134.1875)_{10} \rightarrow (?)_2$$

2	1134	
2	567	0
2	283	1
2	141	1
2	70	1
2	35	0
2	17	0
2	8	1
2	4	0
2	2	0
2	1	0
x		1

$$\begin{aligned}
 0.1875 \times 2 &= 0.375 = 0 \\
 0.375 \times 2 &= 0.75 = 0 \\
 0.75 \times 2 &= 1.5 = 1 \\
 0.5 \times 2 &= 1
 \end{aligned}$$

1 1 1 0
0 0 1 1
1 1 0 1 1

1 - 0 - 0
0 = 0 - 0
1 = 0 - 1
0 = 1 - 1

$$\therefore (1134.1875)_{10} = (10001001110.0011)_2$$

Q- Convert the following from base 10 to base 16

- (i) $(2020)_{10}$ Ans - $(7E4)_{16}$
- (ii) $(2020.65625)_{10}$ Ans - $(7E4.AB)_{16}$
- (iii) $(172)_{10}$ Ans - $(AC)_{16}$
- (iv) $(172.983)_{10}$ Ans - $(AC.FBA5)_{16}$

BINARY ARITHMETICS :-

I. Binary Addition :-

$$0 + 0 = 0$$

$$1 + 0 = 1$$

$$0 + 1 = 1$$

$1 + 1 = 0$ with carry 1 to the next higher column.

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$$\begin{array}{r} \text{eg - } \\ \begin{array}{r} 1010 \\ + 0111 \\ \hline 10001 \end{array} \end{array}$$

$$(10001)_2 \rightarrow (17)_{10}$$

$$\Rightarrow 2^4 + 2^0 = 16 + 1 = (17)_{10}$$

(i)

$$\begin{array}{r} 10111 \\ 1100 \\ \hline 10011 \end{array}$$