

## Webs and Social Media

WebSite is a collection of related web pages and it is published on atleast one web server.

Web Application is a client / server computer program in which client runs in a web server.

Social media is a collection of online communications channels dedicated to community based input, interaction, content sharing and collaboration.

User experience vs Customer experience  
User experience deals with people interacting with your product and experience, (what) they receive from the interaction.  
User experience is measured with success rate, error rate, time to complete task, etc.

### Customer experience

The interaction a person has with brand.

Measure - Overall experience, likelihood to

continuous use, likelihood to recommend to others.

#### Customer Sentiment

Customer sentiment analysis is a method of processing information generally in text format and often from social media sources to determine customer opinions and responses.

#### Web Marketing

- 1) Display advertising
- 2) Social media marketing
- 3) Email marketing
- 4) Video marketing

#### Dash board

Dash board informs how social marketing campaigns are developed and optimized for higher usage engagement, sales and brand advocacy.

#### Terms used by web analytics tools

- 1) Entry Page - A page in which visitor enters to your site.
- 2) Exit Page - A page from which user can exit from the website.

Date 

Date 

3) Page View - When customer clicks on the page it is counted.

4) Session - Visited time (How long you are using)

5) Hit - Requesting for a file from the web server

6) Bounce rate - Percentage of visit that has single page visit.

7) Conversion rate - ratio of ~~total~~ conversion over a relevant denominator.

\* <sup>involves</sup> Social and web analytics

→ Open source vs licensed platforms

Choosing right specifications and optimal solution

Challenges in social media data collection

Participating with People centric Approach

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## Unit II

### Structured data

Data is facts or statistics collected together for relevance or analysis.

Structured data refers to information with a high degree of organization such that inclusion in a relational database is seamless and readily searchable, by simple and straightforward search operations.

### Unstructured Data (same ↑, ultra pulta)

#### Meta data - Data about data

Is a data that provides information about other data

Big Data - It is a term that describes the size & volume of data.

Linked Data - is a method of publishing structured data so that it can be interlinked and become more useful to semantic queries.

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#  
#

## Types of Data

→ Qualitative and Quantitative Data

### Qualitative Data

Represents quality of the observation

Ex Rank → quality of the student

i) Nominal and ii) Ordinal data

i) Nominal → & unordered exists between categories

Ex Colors

### ii) Ordinal data

→ ordering exists between data

Ex Results (Ranking)

### Quantitative Data

→ Can count observations

i) Discrete and ii) Continuous

#### i) Discrete data

Values are discrete

Ex Number of students

#### ii) Continuous

Range of values

Ex Height of a person

What makes you happy?

#

## R programming

R → Ross Ihaka

Robert Gentleman

- used for analysis of data
- fib operation can be performed

## R prog

- R programs goes with .R extension
- # for comment

## R data types

R-Object → Vector, List, Matrix, Array, Factor,  
Data frames

Logical → True, False

print(class(x))  
↳ data type of this  
class inbuilt function

[1] "logical" → gives datatype

Numeric → 12.3, 5, 999

↳ int, float, double all comes in this

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Date: [ ]

Date: [ ]

Integer → 2L, 34L, 0L

Complex → 3+2i

Character → 'a', "good", "23.4", "True"

Raw → "Hello" is stored as 110 111 110 111 110 111  
↳ string stored in the form of integer

## R objects

### Vectors

When you want to create vectors

### Lists

Create a list

list1 ← list(c(2, 5, 3), 21^3, sin)

print(list1) creating

### Matrices

M = matrix(c('a', 'a', 'b', 'c', 'b', 'a'), nrow=3, ncol=3, byrow=TRUE)

a b b } row wise  
a c a } column

a a b } other row wise  
c b a }

### Arrays

Create an array

a ← array(c('green', 'yellow'), dim=c(3, 3, 2))

↓ Row ↓ No. of  
Dimension col matrics

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# [ ]

Factors  
created using vector  
Creating  
apple\_color <- c('green', 'apple', 'green', 'red')  
fact\_app <- factor(apple\_color)

### Data Frame

Creating  
BMI <- data.frame(  
  gender = c("Male", "Female"),  
)  
print(BMI)

### R-Switch Statement

Syntax  
switch(expression, case1, case2, case3....)

### Loop :

repeat loop || while loop || for loop

### For Loop

```
for (value in vector){  
  statements  
}
```

### Function Definition

An R function is created by using the keyword function.

```
func_name <- function (arg1, arg2, arg3... ) {  
  Function body  
}
```

### Function Components

Function Name : This is the actual name

Arguments :

(User defined function)

Built in function - print(seq(32, 44))  
print(mean(25:82))

### User defined function

```
new.function <- function(a) {  
  for (i in 1:a)}  
  b <- i^2  
  print(b)  
}
```

### Without argument

```
new.function ← function () {
    for (i in 1:5) {
        print(i^2)
    }
}
```

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### Lazy Evaluation of Function

```
new.function ← function (a, b) {
    print(a^2)
    print(a)
    print(b) → lazy evaluation
}
new.function(6)
```

→ a = 6  
b has not been found  
Error in print (b): argument "b" missing

### Rules Applied in String Construction

- The quotes at the beginning and end of the string should be both double or single quotes.
- Double quotes can be inserted into a string starting and ending with single quotes.
- Single quote can be inserted into a string starting and ending with double quotes.

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Single  
 → Double quotes can not be inserted into a string starting and ending with single quotes.  
 → Double quotes can not be inserted into a string starting and ending with its double quotes.

### Example

```
a ← 'String 'Start and end with single quote'
print (a)
b ← " Start and end with double quotes"
print (b)
c ← "single " in between double quotes"
print (c)
d ← 'Double quote " in between single quote'
```

### Invalid cases

```
e ← 'Mixed quotes'
f ← 'Single quote' inside single quotes'
```

### String Manipulation

#### Concatenating strings - paste() function

```
paste(..., sep = "", collapse = NULL)
```

any no. of arguments }      removing the space between two strings  
separators

### Example

```
a <- "Hello"
```

```
b <- "How"
```

```
c <- "are you?"
```

```
print(paste(a,b,c))
```

```
print(paste(a,b,c, sep = "-"))
```

↳ How-are-you?-Hello-how-are you?

```
print(paste(a,b,c, sep = "", collapse = " " ))
```

↳ Hello How are you? Hello how are you?

### Formatting numbers and strings

```
format(x, digits, nsmall, scientific, width, justify = c("left", "right", "center", "none"))
```

→ x is vector input

→ digits is the total ~~total~~ number of digits displayed.

→ scientific → displaying scientific notation

→ nsmall → is the minimum number of

digits to the right of the decimal point

→ width indicates the minimum width to be

displayed by padding blanks in the beginning

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# \_\_\_\_\_  
# \_\_\_\_\_

Counting number of characters - `nchar()`

`nchar(n)`

`res <- count nchar("Count the number of characters")`  
`print(res)`

Changing to case - `toupper()` `tolower()`

Extracting parts of a string - `substr()`  
`substring(x, first, last)`

### R-Lists

Creating a list

```
list_data <- list("Red", "Green", "Blue", c(21,32,11),  
TRUE, 51.23, 119.1)
```

```
print(list_data)
```

### Naming List Elements

### Manipulating List Elements

### Converting List to Vector

R-Always

```
vector1 <- c(5,9,3)
```

```
vector2 <- c(10,11,12,13,14,15)
```

```
column.names <- c("COL1", "COL2", "COL3")
```

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# \_\_\_\_\_

Date: [ ] [ ] [ ]

```
rownames <- c("Row1", "Row2", "Row3")
matrix.names <- c("Matrix1", "Matrix2")
```

result <- array(0, vector=1, row)

Matrix 1			Matrix 2		
col1	col2	col3	col1	col2	col3
row1	5	10	9	11	3
row2	10	11	12	10	14
row3	13	14	15	13	15

### Accessing Array Elements

```
print(result[3, 2])
```

third row of second matrix

```
print(result[1, 3, 1])
```

first row, third column, first matrix

### Manipulating Array Elements

#### Calculations over arrays

```
apply(x, margin, fun)
```

x is our array

margin is the name of data at used

fun is the function to be applied

c(1) → row sum  
c(2) → col sum  
c(3) → total sum

	row1	row2	row3		
col1	5	10	13	9	6
col2	9	11	14	1	0
col3	3	12	15	0	11

2 9 6 → 9

6 10

9 0 1

### R-Data Frame

#### Characteristics

- col name should be non-empty
- rowname should be unique
- data stored in a data frame can be of numeric, factor or character type
- each column should contain same number of data items

### Unit I

#### → ROI

Return on investment

Social Media ROI is the sum of all social media actions that create value (profit).

$$\text{Social media ROI} = \frac{\text{Profit}}{\text{Total Investment (budget, people, time)}}$$

→ Brand Reputation refers to how a particular brand is viewed by others.

#### 1) Favourable Brand reputation

A favourable brand reputation means consumers trust your company and feels good about purchasing your goods or services.

#### 2) Unfavourable Brand reputation

Unfavourable brand reputation cause consumers to distrust your company and hesitate to purchase your products or services.

#### → Competitive Advantage

The ability of a company to deliver products or services either at a lower

cost or an improved level than other players (at) in the same industry.

### Unit II

Descriptive statistics are used to describe the basic features of the data in the industry  
Ex: graphical analysis

### R-CSV Files

Getting and Setting  
print (getwd()) → get + print current working directory  
setwd ("~/web/com") → set current working directory

### Reading

read.csv()  
data ← read.csv("input.csv")

print (ncol (data)) } reads n columns & n rows  
print (nrow(data)) }

max (data\$) → maximum value

subset (data, salary == max(sal)) → subset of whatever required, (the field it extracts)

## Writing

wecite.csv read, "output.csv")

some

extracted nature

## R-pie charts

### Syntax

~~input~~ pie(x, labels, radius, main, col, clockwise)

input ↓      ↓      ↓      ↓      ↓      ↓  
 value or description      chart title      if you want  
 vector      to the slices      circle      colours clockwise  
 radius      your want of anti clockwise

## 3DPiechart

pie3DC()

## R-Barcharts