

Institute :

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Transportation Engineering lab and wireless network lab

- ▶ *Topic : ITS (Intelligent Transportation System)*
- ▶ *Training Period : One month under TEQIP-III(Technical Education Quality Program Phase – III) held at Indian Institute of Technology (Hyderabad)*

ABOUT TOPIC

.Csv files :

- ▶ *Worked on .csv file*
- ▶ *Required data in segment. Doing it manually is time consuming task.*
- ▶ *We have done programming in c++ language to get the data of particular segment and in order to made the changes in vast data contained in csv files easily which manually may be tiring.*
- ▶ *Eg: given code insert gap that will be reflected back in the . Csv file:*

```
ifstream myfile;
ofstream pfile;
myfile.open("S1.csv");
pfile.open("way.csv");
while (myfile.good())
{
    string line ;
    pfile<<" " <<endl;
    pfile<<line<<endl;
}
```

The code will make the following changes in the .csv file :-

The screenshot shows a Microsoft Excel spreadsheet with the following data:

Sr.No	Co-ordinates
1	189627.193308394,1974243.51900904
2	189627.246923932,1974243.55509539
3	189627.282571241,1974243.57300004
4	189627.335608466,1974243.57216887
5	189627.388934848,1974243.58979647
6	189627.442261231,1974243.60742406
7	189627.460518618,1974243.64406451
8	189627.478197693,1974243.64378746
9	189627.337343408,1974243.6829214
10	189627.28459534,1974243.70221132
11	189627.266627108,1974243.68402962

The Excel interface includes the ribbon (Home, Insert, Page Layout, Formulas, Data, Review, View), the formula bar (A2), and the Windows taskbar at the bottom. The taskbar shows the Start button, search bar, and several application icons. The system tray displays the time as 3:28 PM on 6/28/2018.

Data extraction Driver Behavior Profile (DBP):

- *For DBP project we have big data(using GPS and vbox) that includes longitudes , latitudes, Lateral Acceleration , Longitudinal Acceleration, Combo_G , Vertical_velocity, Distance .*
- *The primary purpose of DBPs is to provide a common measure of behaviour that enables comparisons across drivers, within drivers across time, within a driver across spatiotemporal environments and any other combinations of driver, time and space*
- *For each GPS observation we have an observed speed, denoted by $v(x_i, t_i)$, which we assume is fixed over interval $\Delta t_i=0.1$. The change in speed during time interval Δt_i (i.e. acceleration or deceleration) can be computed as*

$$\Delta v(x_i, t_i) = \frac{v(x_i, t_i) - v(x_{i-1}, t_{i-1})}{\Delta t_i}$$

Data extraction eg :

upted file - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

Clipboard Font Alignment Number Styles Cells Editing

A1 IIT Hyderabad Main Gate to BHEL circle

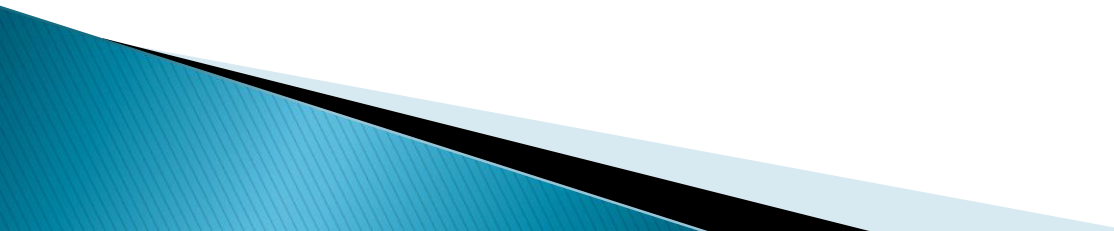
IIT Hyderabad Main Gate to BHEL circle											
Mid-Block Opening (No vehicles)										Geometrical features	No.s
	Int. Speed (km/hr)	Response Time(sec)	Response Distance(m)	Length of MBO	Ini Lat	Ini Long	Final Lat	Final Long			
1	55.213	12.5	187.89	15.42	17°0034.62862800 N	78°0008.04669000 W	17°0034.62734400 N	78°0008.05530600 W	Segment 4	Mid-Block openings	
2	58.241	5.5	87.87	23.56	17°0034.60368000 N	78°0008.49568200 W	17°0034.60481400 N	78°0008.50895400 W	Segment 6	Intersections	
3	58.943	12.5	195.85	14.71	17°0033.84529200 N	78°0009.88650000 W	17°0033.84391200 N	78°0009.89472000 W	Segment 15	Temples	
4	58.126	0.4	6.43	7.97	17°0033.79488600 N	78°0010.09549800 W	17°0033.79354800 N	78°0010.09975200 W	Segment 17	Curves (Speed restrained)	
5	54.857	9.9	140.35	23.79	17°0033.31578000 N	78°0011.32888800 W	17°0033.31156200 N	78°0011.34181200 W	Segment 19	Bus-stops	
6										Others	
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22	Mid - Block section										
	Length of MB 'm'	Avg Speed, KMPH	Travel Time 'sec'		Ini Lat	Ini Long	Final Lat	Final Long			

Activate Windows
Go to Settings to activate Windows.

Ready trial-1 Details 100%

Type here to search 3:32 PM 6/28/2018

R programming language :

- ▶ *I have learned R programming language which is a language and environment for statically computing and graphics.*
 - ▶ *R provide more flexible way of extraction of data and graphics.*
 - ▶ *Learned about swirl package which include the basic detail about the R language.*
- 

Basic of R-language using swirl package

The screenshot displays the RStudio environment with the following components:

- Source Editor:** Contains R code for creating a matrix, binding it with character vectors, and applying classes. The code is as follows:

```
1 my_vector <- matrix(1:20,4,5)
2 my_vector
3 names <- c("surbhi","Misthi","shourya","charu")
4 my_matrix2 <- cbind(names,my_vector)
5 my_matrix2
6 cls_list <- lapply(my_vector,class)
7 cls_list
8 class(cls_list)
9 cls_vec <- sapply(my_vector,class)
10 class(cls_vec)
11 cls_vp <- vapply(my_vector,unique,numeric(1))
12 class(cls_vp)
13 c_nam <- c("names","row1","row2","row3","row4","row5")
14 colnames(my_matrix2) <- c_nam
15 my_matrix2
16 for(i in 1:4)
17 print(my_matrix2)
18 i <- i+1
19 mean(my_vector)
```
- Environment:** Shows the objects created in the workspace:

Object	Class	Value
cls_list	List of 20	
my_matrix2	chr [1:4, 1:6]	"surbhi" "Misthi" ...
my_vector	int [1:4, 1:5]	1 2 3 4 5 6 7 8 ...
- Console:** Shows the output of the R script, including the swirl package menu:

```
1: R Programming
2: Take me to the swirl course repository!

selection: 1

| Please choose a lesson, or type 0 to return to course menu.

1: Basic Building Blocks      2: Workspace and Files      3: Sequences of Numbers
4: Vectors                    5: Missing Values          6: Subsetting Vectors
7: Matrices and Data Frames  8: Logic                   9: Functions
10: lapply and sapply        11: vapply and tapply     12: Looking at Data
13: Simulation                14: Dates and Times       15: Base Graphics

selection: |
```
- Package Manager:** Shows the 'swirl' package installed and updated to version 2.4.3.