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Registration Number: 21112016
Class: 2BSc DS A
R for Analytics
Lab 5

1. Create a dataframe of 150 observations with variables Reg No(int), Programme (Factor)[levels-IBScDS,IIBScDS,IBScEA,IMScDS], Background(factor)[levels-Science,Commerce,Other], sub1_marks(int), sub2_marks(int), sub3_marks(int), sub4_marks(int), sub5_marks(int).

```
set.seed(25)
reg_no <- as.integer(seq(from = 21112001, to = 21112150, by = 1))
program <- as.factor(sample(c("1BScDS", "2BScDS", "1BScEA", "1MScDS"), 150, replace = T))
background <- as.factor(sample(c("Science", "Commerce", "Other"), 150, replace = T))
sub1_marks <- as.integer(sample(0:100, 150, replace = T))
sub2_marks <- as.integer(sample(0:100, 150, replace = T))
sub3_marks <- as.integer(sample(0:100, 150, replace = T))
sub4_marks <- as.integer(sample(0:100, 150, replace = T))
sub5_marks <- as.integer(sample(0:100, 150, replace = T))

dataframe <- data.frame("Registration Number" = reg_no, "Program" = program, "Background" = background,
dataframe
```

##	Registration.Number	Program	Background	Subject.1	Subject.2	Subject.3
## 1	21112001	1BScEA	Commerce	87	57	94
## 2	21112002	1BScDS	Science	2	69	10
## 3	21112003	1MScDS	Other	28	64	23
## 4	21112004	1MScDS	Other	32	18	92
## 5	21112005	1BScDS	Commerce	50	65	36
## 6	21112006	1BScDS	Science	79	88	62
## 7	21112007	1MScDS	Science	36	2	73
## 8	21112008	1BScDS	Other	82	29	36
## 9	21112009	2BScDS	Science	10	92	56
## 10	21112010	1BScEA	Commerce	68	38	88
## 11	21112011	2BScDS	Commerce	92	62	46
## 12	21112012	1MScDS	Other	100	85	67
## 13	21112013	1MScDS	Other	50	79	13
## 14	21112014	1BScDS	Other	34	25	41
## 15	21112015	1MScDS	Other	26	21	1
## 16	21112016	1BScEA	Other	82	56	34
## 17	21112017	1BScDS	Other	88	84	79
## 18	21112018	1MScDS	Other	51	40	46
## 19	21112019	1MScDS	Commerce	2	82	26
## 20	21112020	2BScDS	Science	49	73	15
## 21	21112021	1BScEA	Science	0	16	20
## 22	21112022	1BScEA	Science	77	7	61
## 23	21112023	1BScDS	Other	12	17	99
## 24	21112024	1BScDS	Other	40	25	62
## 25	21112025	1MScDS	Science	38	20	88
## 26	21112026	2BScDS	Science	4	55	50
## 27	21112027	1BScDS	Science	96	20	14
## 28	21112028	1BScEA	Other	25	21	26

## 29	21112029	1MScDS	Other	34	20	9
## 30	21112030	1MScDS	Other	6	23	92
## 31	21112031	1BScDS	Other	42	81	33
## 32	21112032	1BScDS	Other	32	76	50
## 33	21112033	1BScDS	Other	74	36	23
## 34	21112034	1BScDS	Science	27	98	19
## 35	21112035	1BScEA	Commerce	11	36	92
## 36	21112036	1BScDS	Other	70	78	58
## 37	21112037	2BScDS	Other	93	91	86
## 38	21112038	1BScDS	Other	19	34	96
## 39	21112039	1MScDS	Commerce	29	31	91
## 40	21112040	1BScDS	Commerce	46	95	71
## 41	21112041	1BScDS	Science	99	30	48
## 42	21112042	1MScDS	Other	19	84	91
## 43	21112043	1MScDS	Commerce	50	59	62
## 44	21112044	1BScEA	Commerce	70	60	35
## 45	21112045	1MScDS	Commerce	14	100	63
## 46	21112046	2BScDS	Commerce	76	63	63
## 47	21112047	2BScDS	Other	39	68	53
## 48	21112048	1BScEA	Other	40	38	26
## 49	21112049	1BScDS	Science	43	80	44
## 50	21112050	1MScDS	Commerce	81	27	33
## 51	21112051	1BScDS	Science	93	51	66
## 52	21112052	1BScDS	Commerce	87	19	61
## 53	21112053	2BScDS	Science	21	21	24
## 54	21112054	1MScDS	Science	45	16	89
## 55	21112055	1BScDS	Commerce	15	45	26
## 56	21112056	2BScDS	Other	28	36	46
## 57	21112057	1MScDS	Commerce	65	0	99
## 58	21112058	1MScDS	Other	43	35	88
## 59	21112059	1BScDS	Other	56	93	31
## 60	21112060	2BScDS	Other	81	53	14
## 61	21112061	1BScDS	Commerce	100	97	60
## 62	21112062	2BScDS	Science	44	7	52
## 63	21112063	1BScEA	Other	7	83	93
## 64	21112064	1MScDS	Science	22	47	40
## 65	21112065	1MScDS	Commerce	43	58	17
## 66	21112066	1BScEA	Other	71	11	38
## 67	21112067	1BScEA	Commerce	22	68	7
## 68	21112068	1MScDS	Other	28	27	96
## 69	21112069	1MScDS	Science	38	19	55
## 70	21112070	1MScDS	Other	66	81	33
## 71	21112071	1BScDS	Other	53	30	29
## 72	21112072	2BScDS	Science	99	41	46
## 73	21112073	1BScEA	Science	56	24	54
## 74	21112074	1MScDS	Commerce	62	87	74
## 75	21112075	1MScDS	Commerce	28	25	22
## 76	21112076	1BScEA	Science	41	44	62
## 77	21112077	2BScDS	Commerce	6	60	12
## 78	21112078	1BScEA	Science	55	89	54
## 79	21112079	2BScDS	Commerce	5	13	74
## 80	21112080	2BScDS	Commerce	50	26	2
## 81	21112081	1BScEA	Other	35	49	16
## 82	21112082	1MScDS	Other	48	96	48

## 83	21112083	2BScDS	Other	68	36	37
## 84	21112084	1MScDS	Science	91	26	75
## 85	21112085	1BScDS	Science	29	71	70
## 86	21112086	1BScEA	Commerce	55	53	18
## 87	21112087	1BScDS	Other	58	96	93
## 88	21112088	1MScDS	Science	3	50	18
## 89	21112089	2BScDS	Commerce	59	36	13
## 90	21112090	1BScDS	Science	94	76	45
## 91	21112091	1BScEA	Science	41	17	59
## 92	21112092	1BScEA	Commerce	52	54	79
## 93	21112093	2BScDS	Science	0	93	79
## 94	21112094	1BScDS	Other	78	50	76
## 95	21112095	1MScDS	Other	61	49	57
## 96	21112096	1MScDS	Science	34	0	19
## 97	21112097	1MScDS	Other	14	73	17
## 98	21112098	1BScEA	Science	44	4	57
## 99	21112099	1MScDS	Commerce	80	11	55
## 100	21112100	1BScDS	Other	12	61	89
## 101	21112101	2BScDS	Other	97	39	69
## 102	21112102	2BScDS	Science	52	37	28
## 103	21112103	1MScDS	Other	75	28	56
## 104	21112104	1BScEA	Other	95	83	0
## 105	21112105	1BScEA	Science	33	71	17
## 106	21112106	1BScDS	Commerce	88	35	16
## 107	21112107	1BScEA	Science	79	40	1
## 108	21112108	1BScDS	Commerce	49	34	99
## 109	21112109	1MScDS	Other	12	48	65
## 110	21112110	2BScDS	Other	71	86	25
## 111	21112111	1MScDS	Science	25	93	68
## 112	21112112	1BScDS	Commerce	37	46	76
## 113	21112113	1MScDS	Other	76	2	35
## 114	21112114	2BScDS	Science	65	78	1
## 115	21112115	1MScDS	Science	99	59	22
## 116	21112116	1BScEA	Commerce	58	45	73
## 117	21112117	1MScDS	Commerce	2	46	67
## 118	21112118	2BScDS	Science	10	78	8
## 119	21112119	1BScEA	Commerce	44	81	31
## 120	21112120	1MScDS	Other	100	17	64
## 121	21112121	1MScDS	Commerce	25	11	22
## 122	21112122	1BScDS	Science	36	15	56
## 123	21112123	2BScDS	Other	96	40	99
## 124	21112124	1MScDS	Science	5	19	81
## 125	21112125	1BScDS	Commerce	95	45	35
## 126	21112126	1BScDS	Science	12	73	42
## 127	21112127	2BScDS	Commerce	4	75	98
## 128	21112128	1MScDS	Other	84	47	78
## 129	21112129	1BScEA	Other	93	4	9
## 130	21112130	1BScDS	Other	32	59	45
## 131	21112131	1BScEA	Other	10	45	95
## 132	21112132	2BScDS	Other	93	30	61
## 133	21112133	1MScDS	Other	81	37	67
## 134	21112134	1MScDS	Science	44	58	33
## 135	21112135	2BScDS	Science	87	10	74
## 136	21112136	1BScDS	Other	1	68	87

## 137	21112137	1BScDS	Commerce	32	22	54
## 138	21112138	2BScDS	Science	100	54	86
## 139	21112139	2BScDS	Other	47	22	21
## 140	21112140	2BScDS	Commerce	37	44	31
## 141	21112141	1MScDS	Other	46	35	13
## 142	21112142	1MScDS	Other	71	93	41
## 143	21112143	1BScEA	Other	4	76	76
## 144	21112144	1MScDS	Other	98	76	57
## 145	21112145	1MScDS	Other	52	47	9
## 146	21112146	2BScDS	Commerce	88	63	42
## 147	21112147	1BScEA	Other	50	35	65
## 148	21112148	1BScEA	Commerce	95	35	100
## 149	21112149	1MScDS	Commerce	90	89	69
## 150	21112150	1MScDS	Other	51	18	79
##	Subject.4	Subject.5				
## 1	23	61				
## 2	30	53				
## 3	26	46				
## 4	3	57				
## 5	90	47				
## 6	91	1				
## 7	95	96				
## 8	99	31				
## 9	100	83				
## 10	32	22				
## 11	46	61				
## 12	2	39				
## 13	63	5				
## 14	57	76				
## 15	98	70				
## 16	57	63				
## 17	72	79				
## 18	31	46				
## 19	66	28				
## 20	78	81				
## 21	89	11				
## 22	10	63				
## 23	27	90				
## 24	5	11				
## 25	48	25				
## 26	67	23				
## 27	11	61				
## 28	5	91				
## 29	0	67				
## 30	36	31				
## 31	65	21				
## 32	57	42				
## 33	29	34				
## 34	82	7				
## 35	10	54				
## 36	92	70				
## 37	70	83				
## 38	51	98				
## 39	47	47				

## 40	30	83
## 41	96	42
## 42	98	1
## 43	40	57
## 44	46	9
## 45	76	63
## 46	30	99
## 47	34	85
## 48	93	79
## 49	46	10
## 50	98	1
## 51	85	44
## 52	53	87
## 53	98	87
## 54	39	91
## 55	65	81
## 56	36	28
## 57	71	52
## 58	7	46
## 59	61	19
## 60	7	99
## 61	5	76
## 62	100	4
## 63	58	81
## 64	64	92
## 65	46	58
## 66	6	14
## 67	40	70
## 68	26	64
## 69	46	96
## 70	39	22
## 71	99	65
## 72	25	18
## 73	95	74
## 74	69	52
## 75	7	23
## 76	14	68
## 77	51	62
## 78	96	63
## 79	99	1
## 80	6	57
## 81	66	5
## 82	81	95
## 83	76	10
## 84	38	80
## 85	50	96
## 86	43	59
## 87	76	39
## 88	63	28
## 89	83	62
## 90	61	78
## 91	43	48
## 92	47	62
## 93	20	85

## 94	84	71
## 95	17	52
## 96	81	100
## 97	18	50
## 98	39	2
## 99	50	4
## 100	88	80
## 101	37	37
## 102	60	20
## 103	24	17
## 104	94	40
## 105	99	92
## 106	3	42
## 107	81	57
## 108	43	48
## 109	33	34
## 110	47	10
## 111	1	2
## 112	23	39
## 113	71	42
## 114	18	22
## 115	97	25
## 116	22	12
## 117	84	53
## 118	55	16
## 119	16	7
## 120	18	5
## 121	24	53
## 122	69	66
## 123	84	5
## 124	61	74
## 125	44	81
## 126	51	5
## 127	32	39
## 128	92	93
## 129	73	12
## 130	33	83
## 131	88	37
## 132	38	87
## 133	74	48
## 134	71	88
## 135	35	20
## 136	14	42
## 137	55	24
## 138	19	76
## 139	31	83
## 140	50	81
## 141	83	80
## 142	8	39
## 143	50	35
## 144	93	92
## 145	67	99
## 146	23	75
## 147	88	10

```
## 148      80      79
## 149      29      50
## 150      50      24
```

2. Analyze the dataset and summarise.

```
cat("----- Structure -----\\n\\n")
```

```
##----- Structure -----
```

```
str(dataframe)
```

```
## 'data.frame': 150 obs. of 8 variables:
## $ Registration.Number: int 21112001 21112002 21112003 21112004 21112005 21112006 21112007 21112008
## $ Program : Factor w/ 4 levels "1BScDS","1BScEA",...: 2 1 3 3 1 1 3 1 4 2 ...
## $ Background : Factor w/ 3 levels "Commerce","Other",...: 1 3 2 2 1 3 3 2 3 1 ...
## $ Subject.1 : int 87 2 28 32 50 79 36 82 10 68 ...
## $ Subject.2 : int 57 69 64 18 65 88 2 29 92 38 ...
## $ Subject.3 : int 94 10 23 92 36 62 73 36 56 88 ...
## $ Subject.4 : int 23 30 26 3 90 91 95 99 100 32 ...
## $ Subject.5 : int 61 53 46 57 47 1 96 31 83 22 ...
```

```
cat("\\n\\n----- Summary -----\\n\\n")
```

```
##
##----- Summary -----
##
```

```
summary(dataframe)
```

```
## Registration.Number Program Background Subject.1
## Min. :21112001 1BScDS:38 Commerce:42 Min. : 0.00
## 1st Qu.:21112038 1BScEA:30 Other :64 1st Qu.: 28.00
## Median :21112076 1MScDS:51 Science :44 Median : 48.50
## Mean :21112076 2BScDS:31 Mean : 50.44
## 3rd Qu.:21112113 3rd Qu.: 77.75
## Max. :21112150 Max. :100.00
## Subject.2 Subject.3 Subject.4 Subject.5
## Min. : 0.00 Min. : 0.00 Min. : 0.00 Min. : 1.00
## 1st Qu.: 26.00 1st Qu.: 26.00 1st Qu.: 29.25 1st Qu.: 24.00
## Median : 46.00 Median : 53.50 Median : 50.00 Median : 52.00
## Mean : 48.77 Mean : 50.84 Mean : 52.13 Mean : 50.69
## 3rd Qu.: 73.00 3rd Qu.: 73.75 3rd Qu.: 77.50 3rd Qu.: 78.75
## Max. :100.00 Max. :100.00 Max. :100.00 Max. :100.00
```

```
# There are 8 columns to this dataframe where we have 150 students of programs [1BScDS - 38, 1BScDS - 3
```

3. Create a new column “Result” that has levels, “Distinction”, “passed” and “failed” considering that students percentage above 75 is a distinction, between 40 and 75 passed and others

```

result <- (sub1_marks + sub2_marks + sub3_marks + sub4_marks + sub5_marks)/5
resultf <- as.factor(ifelse(result>75, "Distinction", ifelse(result<40, "Fail", "Passed")))

dataframe$Result <- resultf
dataframe

```

##	Registration.Number	Program	Background	Subject.1	Subject.2	Subject.3
## 1	21112001	1BScEA	Commerce	87	57	94
## 2	21112002	1BScDS	Science	2	69	10
## 3	21112003	1MScDS	Other	28	64	23
## 4	21112004	1MScDS	Other	32	18	92
## 5	21112005	1BScDS	Commerce	50	65	36
## 6	21112006	1BScDS	Science	79	88	62
## 7	21112007	1MScDS	Science	36	2	73
## 8	21112008	1BScDS	Other	82	29	36
## 9	21112009	2BScDS	Science	10	92	56
## 10	21112010	1BScEA	Commerce	68	38	88
## 11	21112011	2BScDS	Commerce	92	62	46
## 12	21112012	1MScDS	Other	100	85	67
## 13	21112013	1MScDS	Other	50	79	13
## 14	21112014	1BScDS	Other	34	25	41
## 15	21112015	1MScDS	Other	26	21	1
## 16	21112016	1BScEA	Other	82	56	34
## 17	21112017	1BScDS	Other	88	84	79
## 18	21112018	1MScDS	Other	51	40	46
## 19	21112019	1MScDS	Commerce	2	82	26
## 20	21112020	2BScDS	Science	49	73	15
## 21	21112021	1BScEA	Science	0	16	20
## 22	21112022	1BScEA	Science	77	7	61
## 23	21112023	1BScDS	Other	12	17	99
## 24	21112024	1BScDS	Other	40	25	62
## 25	21112025	1MScDS	Science	38	20	88
## 26	21112026	2BScDS	Science	4	55	50
## 27	21112027	1BScDS	Science	96	20	14
## 28	21112028	1BScEA	Other	25	21	26
## 29	21112029	1MScDS	Other	34	20	9
## 30	21112030	1MScDS	Other	6	23	92
## 31	21112031	1BScDS	Other	42	81	33
## 32	21112032	1BScDS	Other	32	76	50
## 33	21112033	1BScDS	Other	74	36	23
## 34	21112034	1BScDS	Science	27	98	19
## 35	21112035	1BScEA	Commerce	11	36	92
## 36	21112036	1BScDS	Other	70	78	58
## 37	21112037	2BScDS	Other	93	91	86
## 38	21112038	1BScDS	Other	19	34	96
## 39	21112039	1MScDS	Commerce	29	31	91
## 40	21112040	1BScDS	Commerce	46	95	71
## 41	21112041	1BScDS	Science	99	30	48
## 42	21112042	1MScDS	Other	19	84	91
## 43	21112043	1MScDS	Commerce	50	59	62
## 44	21112044	1BScEA	Commerce	70	60	35
## 45	21112045	1MScDS	Commerce	14	100	63
## 46	21112046	2BScDS	Commerce	76	63	63

## 47	21112047	2BScDS	Other	39	68	53
## 48	21112048	1BScEA	Other	40	38	26
## 49	21112049	1BScDS	Science	43	80	44
## 50	21112050	1MScDS	Commerce	81	27	33
## 51	21112051	1BScDS	Science	93	51	66
## 52	21112052	1BScDS	Commerce	87	19	61
## 53	21112053	2BScDS	Science	21	21	24
## 54	21112054	1MScDS	Science	45	16	89
## 55	21112055	1BScDS	Commerce	15	45	26
## 56	21112056	2BScDS	Other	28	36	46
## 57	21112057	1MScDS	Commerce	65	0	99
## 58	21112058	1MScDS	Other	43	35	88
## 59	21112059	1BScDS	Other	56	93	31
## 60	21112060	2BScDS	Other	81	53	14
## 61	21112061	1BScDS	Commerce	100	97	60
## 62	21112062	2BScDS	Science	44	7	52
## 63	21112063	1BScEA	Other	7	83	93
## 64	21112064	1MScDS	Science	22	47	40
## 65	21112065	1MScDS	Commerce	43	58	17
## 66	21112066	1BScEA	Other	71	11	38
## 67	21112067	1BScEA	Commerce	22	68	7
## 68	21112068	1MScDS	Other	28	27	96
## 69	21112069	1MScDS	Science	38	19	55
## 70	21112070	1MScDS	Other	66	81	33
## 71	21112071	1BScDS	Other	53	30	29
## 72	21112072	2BScDS	Science	99	41	46
## 73	21112073	1BScEA	Science	56	24	54
## 74	21112074	1MScDS	Commerce	62	87	74
## 75	21112075	1MScDS	Commerce	28	25	22
## 76	21112076	1BScEA	Science	41	44	62
## 77	21112077	2BScDS	Commerce	6	60	12
## 78	21112078	1BScEA	Science	55	89	54
## 79	21112079	2BScDS	Commerce	5	13	74
## 80	21112080	2BScDS	Commerce	50	26	2
## 81	21112081	1BScEA	Other	35	49	16
## 82	21112082	1MScDS	Other	48	96	48
## 83	21112083	2BScDS	Other	68	36	37
## 84	21112084	1MScDS	Science	91	26	75
## 85	21112085	1BScDS	Science	29	71	70
## 86	21112086	1BScEA	Commerce	55	53	18
## 87	21112087	1BScDS	Other	58	96	93
## 88	21112088	1MScDS	Science	3	50	18
## 89	21112089	2BScDS	Commerce	59	36	13
## 90	21112090	1BScDS	Science	94	76	45
## 91	21112091	1BScEA	Science	41	17	59
## 92	21112092	1BScEA	Commerce	52	54	79
## 93	21112093	2BScDS	Science	0	93	79
## 94	21112094	1BScDS	Other	78	50	76
## 95	21112095	1MScDS	Other	61	49	57
## 96	21112096	1MScDS	Science	34	0	19
## 97	21112097	1MScDS	Other	14	73	17
## 98	21112098	1BScEA	Science	44	4	57
## 99	21112099	1MScDS	Commerce	80	11	55
## 100	21112100	1BScDS	Other	12	61	89

## 101	21112101	2BScDS	Other	97	39	69
## 102	21112102	2BScDS	Science	52	37	28
## 103	21112103	1MScDS	Other	75	28	56
## 104	21112104	1BScEA	Other	95	83	0
## 105	21112105	1BScEA	Science	33	71	17
## 106	21112106	1BScDS	Commerce	88	35	16
## 107	21112107	1BScEA	Science	79	40	1
## 108	21112108	1BScDS	Commerce	49	34	99
## 109	21112109	1MScDS	Other	12	48	65
## 110	21112110	2BScDS	Other	71	86	25
## 111	21112111	1MScDS	Science	25	93	68
## 112	21112112	1BScDS	Commerce	37	46	76
## 113	21112113	1MScDS	Other	76	2	35
## 114	21112114	2BScDS	Science	65	78	1
## 115	21112115	1MScDS	Science	99	59	22
## 116	21112116	1BScEA	Commerce	58	45	73
## 117	21112117	1MScDS	Commerce	2	46	67
## 118	21112118	2BScDS	Science	10	78	8
## 119	21112119	1BScEA	Commerce	44	81	31
## 120	21112120	1MScDS	Other	100	17	64
## 121	21112121	1MScDS	Commerce	25	11	22
## 122	21112122	1BScDS	Science	36	15	56
## 123	21112123	2BScDS	Other	96	40	99
## 124	21112124	1MScDS	Science	5	19	81
## 125	21112125	1BScDS	Commerce	95	45	35
## 126	21112126	1BScDS	Science	12	73	42
## 127	21112127	2BScDS	Commerce	4	75	98
## 128	21112128	1MScDS	Other	84	47	78
## 129	21112129	1BScEA	Other	93	4	9
## 130	21112130	1BScDS	Other	32	59	45
## 131	21112131	1BScEA	Other	10	45	95
## 132	21112132	2BScDS	Other	93	30	61
## 133	21112133	1MScDS	Other	81	37	67
## 134	21112134	1MScDS	Science	44	58	33
## 135	21112135	2BScDS	Science	87	10	74
## 136	21112136	1BScDS	Other	1	68	87
## 137	21112137	1BScDS	Commerce	32	22	54
## 138	21112138	2BScDS	Science	100	54	86
## 139	21112139	2BScDS	Other	47	22	21
## 140	21112140	2BScDS	Commerce	37	44	31
## 141	21112141	1MScDS	Other	46	35	13
## 142	21112142	1MScDS	Other	71	93	41
## 143	21112143	1BScEA	Other	4	76	76
## 144	21112144	1MScDS	Other	98	76	57
## 145	21112145	1MScDS	Other	52	47	9
## 146	21112146	2BScDS	Commerce	88	63	42
## 147	21112147	1BScEA	Other	50	35	65
## 148	21112148	1BScEA	Commerce	95	35	100
## 149	21112149	1MScDS	Commerce	90	89	69
## 150	21112150	1MScDS	Other	51	18	79
##	Subject.4	Subject.5	Result			
## 1	23	61	Passed			
## 2	30	53	Fail			
## 3	26	46	Fail			

## 4	3	57	Passed
## 5	90	47	Passed
## 6	91	1	Passed
## 7	95	96	Passed
## 8	99	31	Passed
## 9	100	83	Passed
## 10	32	22	Passed
## 11	46	61	Passed
## 12	2	39	Passed
## 13	63	5	Passed
## 14	57	76	Passed
## 15	98	70	Passed
## 16	57	63	Passed
## 17	72	79	Distinction
## 18	31	46	Passed
## 19	66	28	Passed
## 20	78	81	Passed
## 21	89	11	Fail
## 22	10	63	Passed
## 23	27	90	Passed
## 24	5	11	Fail
## 25	48	25	Passed
## 26	67	23	Fail
## 27	11	61	Passed
## 28	5	91	Fail
## 29	0	67	Fail
## 30	36	31	Fail
## 31	65	21	Passed
## 32	57	42	Passed
## 33	29	34	Fail
## 34	82	7	Passed
## 35	10	54	Passed
## 36	92	70	Passed
## 37	70	83	Distinction
## 38	51	98	Passed
## 39	47	47	Passed
## 40	30	83	Passed
## 41	96	42	Passed
## 42	98	1	Passed
## 43	40	57	Passed
## 44	46	9	Passed
## 45	76	63	Passed
## 46	30	99	Passed
## 47	34	85	Passed
## 48	93	79	Passed
## 49	46	10	Passed
## 50	98	1	Passed
## 51	85	44	Passed
## 52	53	87	Passed
## 53	98	87	Passed
## 54	39	91	Passed
## 55	65	81	Passed
## 56	36	28	Fail
## 57	71	52	Passed

## 58	7	46	Passed
## 59	61	19	Passed
## 60	7	99	Passed
## 61	5	76	Passed
## 62	100	4	Passed
## 63	58	81	Passed
## 64	64	92	Passed
## 65	46	58	Passed
## 66	6	14	Fail
## 67	40	70	Passed
## 68	26	64	Passed
## 69	46	96	Passed
## 70	39	22	Passed
## 71	99	65	Passed
## 72	25	18	Passed
## 73	95	74	Passed
## 74	69	52	Passed
## 75	7	23	Fail
## 76	14	68	Passed
## 77	51	62	Fail
## 78	96	63	Passed
## 79	99	1	Fail
## 80	6	57	Fail
## 81	66	5	Fail
## 82	81	95	Passed
## 83	76	10	Passed
## 84	38	80	Passed
## 85	50	96	Passed
## 86	43	59	Passed
## 87	76	39	Passed
## 88	63	28	Fail
## 89	83	62	Passed
## 90	61	78	Passed
## 91	43	48	Passed
## 92	47	62	Passed
## 93	20	85	Passed
## 94	84	71	Passed
## 95	17	52	Passed
## 96	81	100	Passed
## 97	18	50	Fail
## 98	39	2	Fail
## 99	50	4	Passed
## 100	88	80	Passed
## 101	37	37	Passed
## 102	60	20	Fail
## 103	24	17	Passed
## 104	94	40	Passed
## 105	99	92	Passed
## 106	3	42	Fail
## 107	81	57	Passed
## 108	43	48	Passed
## 109	33	34	Fail
## 110	47	10	Passed
## 111	1	2	Fail

## 112	23	39	Passed
## 113	71	42	Passed
## 114	18	22	Fail
## 115	97	25	Passed
## 116	22	12	Passed
## 117	84	53	Passed
## 118	55	16	Fail
## 119	16	7	Fail
## 120	18	5	Passed
## 121	24	53	Fail
## 122	69	66	Passed
## 123	84	5	Passed
## 124	61	74	Passed
## 125	44	81	Passed
## 126	51	5	Fail
## 127	32	39	Passed
## 128	92	93	Distinction
## 129	73	12	Fail
## 130	33	83	Passed
## 131	88	37	Passed
## 132	38	87	Passed
## 133	74	48	Passed
## 134	71	88	Passed
## 135	35	20	Passed
## 136	14	42	Passed
## 137	55	24	Fail
## 138	19	76	Passed
## 139	31	83	Passed
## 140	50	81	Passed
## 141	83	80	Passed
## 142	8	39	Passed
## 143	50	35	Passed
## 144	93	92	Distinction
## 145	67	99	Passed
## 146	23	75	Passed
## 147	88	10	Passed
## 148	80	79	Distinction
## 149	29	50	Passed
## 150	50	24	Passed

4. Create a new column "Avg. Result" that finds the average marks of all the students.

```
avg_result <- (sub1_marks + sub2_marks + sub3_marks + sub4_marks + sub5_marks)/5
dataframe$AverageResult <- avg_result
dataframe
```

##	Registration.Number	Program	Background	Subject.1	Subject.2	Subject.3
## 1	21112001	1BScEA	Commerce	87	57	94
## 2	21112002	1BScDS	Science	2	69	10
## 3	21112003	1MScDS	Other	28	64	23
## 4	21112004	1MScDS	Other	32	18	92
## 5	21112005	1BScDS	Commerce	50	65	36
## 6	21112006	1BScDS	Science	79	88	62
## 7	21112007	1MScDS	Science	36	2	73

## 8	21112008	1BScDS	Other	82	29	36
## 9	21112009	2BScDS	Science	10	92	56
## 10	21112010	1BScEA	Commerce	68	38	88
## 11	21112011	2BScDS	Commerce	92	62	46
## 12	21112012	1MScDS	Other	100	85	67
## 13	21112013	1MScDS	Other	50	79	13
## 14	21112014	1BScDS	Other	34	25	41
## 15	21112015	1MScDS	Other	26	21	1
## 16	21112016	1BScEA	Other	82	56	34
## 17	21112017	1BScDS	Other	88	84	79
## 18	21112018	1MScDS	Other	51	40	46
## 19	21112019	1MScDS	Commerce	2	82	26
## 20	21112020	2BScDS	Science	49	73	15
## 21	21112021	1BScEA	Science	0	16	20
## 22	21112022	1BScEA	Science	77	7	61
## 23	21112023	1BScDS	Other	12	17	99
## 24	21112024	1BScDS	Other	40	25	62
## 25	21112025	1MScDS	Science	38	20	88
## 26	21112026	2BScDS	Science	4	55	50
## 27	21112027	1BScDS	Science	96	20	14
## 28	21112028	1BScEA	Other	25	21	26
## 29	21112029	1MScDS	Other	34	20	9
## 30	21112030	1MScDS	Other	6	23	92
## 31	21112031	1BScDS	Other	42	81	33
## 32	21112032	1BScDS	Other	32	76	50
## 33	21112033	1BScDS	Other	74	36	23
## 34	21112034	1BScDS	Science	27	98	19
## 35	21112035	1BScEA	Commerce	11	36	92
## 36	21112036	1BScDS	Other	70	78	58
## 37	21112037	2BScDS	Other	93	91	86
## 38	21112038	1BScDS	Other	19	34	96
## 39	21112039	1MScDS	Commerce	29	31	91
## 40	21112040	1BScDS	Commerce	46	95	71
## 41	21112041	1BScDS	Science	99	30	48
## 42	21112042	1MScDS	Other	19	84	91
## 43	21112043	1MScDS	Commerce	50	59	62
## 44	21112044	1BScEA	Commerce	70	60	35
## 45	21112045	1MScDS	Commerce	14	100	63
## 46	21112046	2BScDS	Commerce	76	63	63
## 47	21112047	2BScDS	Other	39	68	53
## 48	21112048	1BScEA	Other	40	38	26
## 49	21112049	1BScDS	Science	43	80	44
## 50	21112050	1MScDS	Commerce	81	27	33
## 51	21112051	1BScDS	Science	93	51	66
## 52	21112052	1BScDS	Commerce	87	19	61
## 53	21112053	2BScDS	Science	21	21	24
## 54	21112054	1MScDS	Science	45	16	89
## 55	21112055	1BScDS	Commerce	15	45	26
## 56	21112056	2BScDS	Other	28	36	46
## 57	21112057	1MScDS	Commerce	65	0	99
## 58	21112058	1MScDS	Other	43	35	88
## 59	21112059	1BScDS	Other	56	93	31
## 60	21112060	2BScDS	Other	81	53	14
## 61	21112061	1BScDS	Commerce	100	97	60

## 62	21112062	2BScDS	Science	44	7	52
## 63	21112063	1BScEA	Other	7	83	93
## 64	21112064	1MScDS	Science	22	47	40
## 65	21112065	1MScDS	Commerce	43	58	17
## 66	21112066	1BScEA	Other	71	11	38
## 67	21112067	1BScEA	Commerce	22	68	7
## 68	21112068	1MScDS	Other	28	27	96
## 69	21112069	1MScDS	Science	38	19	55
## 70	21112070	1MScDS	Other	66	81	33
## 71	21112071	1BScDS	Other	53	30	29
## 72	21112072	2BScDS	Science	99	41	46
## 73	21112073	1BScEA	Science	56	24	54
## 74	21112074	1MScDS	Commerce	62	87	74
## 75	21112075	1MScDS	Commerce	28	25	22
## 76	21112076	1BScEA	Science	41	44	62
## 77	21112077	2BScDS	Commerce	6	60	12
## 78	21112078	1BScEA	Science	55	89	54
## 79	21112079	2BScDS	Commerce	5	13	74
## 80	21112080	2BScDS	Commerce	50	26	2
## 81	21112081	1BScEA	Other	35	49	16
## 82	21112082	1MScDS	Other	48	96	48
## 83	21112083	2BScDS	Other	68	36	37
## 84	21112084	1MScDS	Science	91	26	75
## 85	21112085	1BScDS	Science	29	71	70
## 86	21112086	1BScEA	Commerce	55	53	18
## 87	21112087	1BScDS	Other	58	96	93
## 88	21112088	1MScDS	Science	3	50	18
## 89	21112089	2BScDS	Commerce	59	36	13
## 90	21112090	1BScDS	Science	94	76	45
## 91	21112091	1BScEA	Science	41	17	59
## 92	21112092	1BScEA	Commerce	52	54	79
## 93	21112093	2BScDS	Science	0	93	79
## 94	21112094	1BScDS	Other	78	50	76
## 95	21112095	1MScDS	Other	61	49	57
## 96	21112096	1MScDS	Science	34	0	19
## 97	21112097	1MScDS	Other	14	73	17
## 98	21112098	1BScEA	Science	44	4	57
## 99	21112099	1MScDS	Commerce	80	11	55
## 100	21112100	1BScDS	Other	12	61	89
## 101	21112101	2BScDS	Other	97	39	69
## 102	21112102	2BScDS	Science	52	37	28
## 103	21112103	1MScDS	Other	75	28	56
## 104	21112104	1BScEA	Other	95	83	0
## 105	21112105	1BScEA	Science	33	71	17
## 106	21112106	1BScDS	Commerce	88	35	16
## 107	21112107	1BScEA	Science	79	40	1
## 108	21112108	1BScDS	Commerce	49	34	99
## 109	21112109	1MScDS	Other	12	48	65
## 110	21112110	2BScDS	Other	71	86	25
## 111	21112111	1MScDS	Science	25	93	68
## 112	21112112	1BScDS	Commerce	37	46	76
## 113	21112113	1MScDS	Other	76	2	35
## 114	21112114	2BScDS	Science	65	78	1
## 115	21112115	1MScDS	Science	99	59	22

## 116	21112116	1BScEA	Commerce	58	45	73
## 117	21112117	1MScDS	Commerce	2	46	67
## 118	21112118	2BScDS	Science	10	78	8
## 119	21112119	1BScEA	Commerce	44	81	31
## 120	21112120	1MScDS	Other	100	17	64
## 121	21112121	1MScDS	Commerce	25	11	22
## 122	21112122	1BScDS	Science	36	15	56
## 123	21112123	2BScDS	Other	96	40	99
## 124	21112124	1MScDS	Science	5	19	81
## 125	21112125	1BScDS	Commerce	95	45	35
## 126	21112126	1BScDS	Science	12	73	42
## 127	21112127	2BScDS	Commerce	4	75	98
## 128	21112128	1MScDS	Other	84	47	78
## 129	21112129	1BScEA	Other	93	4	9
## 130	21112130	1BScDS	Other	32	59	45
## 131	21112131	1BScEA	Other	10	45	95
## 132	21112132	2BScDS	Other	93	30	61
## 133	21112133	1MScDS	Other	81	37	67
## 134	21112134	1MScDS	Science	44	58	33
## 135	21112135	2BScDS	Science	87	10	74
## 136	21112136	1BScDS	Other	1	68	87
## 137	21112137	1BScDS	Commerce	32	22	54
## 138	21112138	2BScDS	Science	100	54	86
## 139	21112139	2BScDS	Other	47	22	21
## 140	21112140	2BScDS	Commerce	37	44	31
## 141	21112141	1MScDS	Other	46	35	13
## 142	21112142	1MScDS	Other	71	93	41
## 143	21112143	1BScEA	Other	4	76	76
## 144	21112144	1MScDS	Other	98	76	57
## 145	21112145	1MScDS	Other	52	47	9
## 146	21112146	2BScDS	Commerce	88	63	42
## 147	21112147	1BScEA	Other	50	35	65
## 148	21112148	1BScEA	Commerce	95	35	100
## 149	21112149	1MScDS	Commerce	90	89	69
## 150	21112150	1MScDS	Other	51	18	79
##	Subject.4	Subject.5	Result	Average	Result	
## 1	23	61	Passed	64.4		
## 2	30	53	Fail	32.8		
## 3	26	46	Fail	37.4		
## 4	3	57	Passed	40.4		
## 5	90	47	Passed	57.6		
## 6	91	1	Passed	64.2		
## 7	95	96	Passed	60.4		
## 8	99	31	Passed	55.4		
## 9	100	83	Passed	68.2		
## 10	32	22	Passed	49.6		
## 11	46	61	Passed	61.4		
## 12	2	39	Passed	58.6		
## 13	63	5	Passed	42.0		
## 14	57	76	Passed	46.6		
## 15	98	70	Passed	43.2		
## 16	57	63	Passed	58.4		
## 17	72	79	Distinction	80.4		
## 18	31	46	Passed	42.8		

## 19	66	28	Passed	40.8
## 20	78	81	Passed	59.2
## 21	89	11	Fail	27.2
## 22	10	63	Passed	43.6
## 23	27	90	Passed	49.0
## 24	5	11	Fail	28.6
## 25	48	25	Passed	43.8
## 26	67	23	Fail	39.8
## 27	11	61	Passed	40.4
## 28	5	91	Fail	33.6
## 29	0	67	Fail	26.0
## 30	36	31	Fail	37.6
## 31	65	21	Passed	48.4
## 32	57	42	Passed	51.4
## 33	29	34	Fail	39.2
## 34	82	7	Passed	46.6
## 35	10	54	Passed	40.6
## 36	92	70	Passed	73.6
## 37	70	83	Distinction	84.6
## 38	51	98	Passed	59.6
## 39	47	47	Passed	49.0
## 40	30	83	Passed	65.0
## 41	96	42	Passed	63.0
## 42	98	1	Passed	58.6
## 43	40	57	Passed	53.6
## 44	46	9	Passed	44.0
## 45	76	63	Passed	63.2
## 46	30	99	Passed	66.2
## 47	34	85	Passed	55.8
## 48	93	79	Passed	55.2
## 49	46	10	Passed	44.6
## 50	98	1	Passed	48.0
## 51	85	44	Passed	67.8
## 52	53	87	Passed	61.4
## 53	98	87	Passed	50.2
## 54	39	91	Passed	56.0
## 55	65	81	Passed	46.4
## 56	36	28	Fail	34.8
## 57	71	52	Passed	57.4
## 58	7	46	Passed	43.8
## 59	61	19	Passed	52.0
## 60	7	99	Passed	50.8
## 61	5	76	Passed	67.6
## 62	100	4	Passed	41.4
## 63	58	81	Passed	64.4
## 64	64	92	Passed	53.0
## 65	46	58	Passed	44.4
## 66	6	14	Fail	28.0
## 67	40	70	Passed	41.4
## 68	26	64	Passed	48.2
## 69	46	96	Passed	50.8
## 70	39	22	Passed	48.2
## 71	99	65	Passed	55.2
## 72	25	18	Passed	45.8

## 73	95	74	Passed	60.6
## 74	69	52	Passed	68.8
## 75	7	23	Fail	21.0
## 76	14	68	Passed	45.8
## 77	51	62	Fail	38.2
## 78	96	63	Passed	71.4
## 79	99	1	Fail	38.4
## 80	6	57	Fail	28.2
## 81	66	5	Fail	34.2
## 82	81	95	Passed	73.6
## 83	76	10	Passed	45.4
## 84	38	80	Passed	62.0
## 85	50	96	Passed	63.2
## 86	43	59	Passed	45.6
## 87	76	39	Passed	72.4
## 88	63	28	Fail	32.4
## 89	83	62	Passed	50.6
## 90	61	78	Passed	70.8
## 91	43	48	Passed	41.6
## 92	47	62	Passed	58.8
## 93	20	85	Passed	55.4
## 94	84	71	Passed	71.8
## 95	17	52	Passed	47.2
## 96	81	100	Passed	46.8
## 97	18	50	Fail	34.4
## 98	39	2	Fail	29.2
## 99	50	4	Passed	40.0
## 100	88	80	Passed	66.0
## 101	37	37	Passed	55.8
## 102	60	20	Fail	39.4
## 103	24	17	Passed	40.0
## 104	94	40	Passed	62.4
## 105	99	92	Passed	62.4
## 106	3	42	Fail	36.8
## 107	81	57	Passed	51.6
## 108	43	48	Passed	54.6
## 109	33	34	Fail	38.4
## 110	47	10	Passed	47.8
## 111	1	2	Fail	37.8
## 112	23	39	Passed	44.2
## 113	71	42	Passed	45.2
## 114	18	22	Fail	36.8
## 115	97	25	Passed	60.4
## 116	22	12	Passed	42.0
## 117	84	53	Passed	50.4
## 118	55	16	Fail	33.4
## 119	16	7	Fail	35.8
## 120	18	5	Passed	40.8
## 121	24	53	Fail	27.0
## 122	69	66	Passed	48.4
## 123	84	5	Passed	64.8
## 124	61	74	Passed	48.0
## 125	44	81	Passed	60.0
## 126	51	5	Fail	36.6

## 127	32	39	Passed	49.6
## 128	92	93	Distinction	78.8
## 129	73	12	Fail	38.2
## 130	33	83	Passed	50.4
## 131	88	37	Passed	55.0
## 132	38	87	Passed	61.8
## 133	74	48	Passed	61.4
## 134	71	88	Passed	58.8
## 135	35	20	Passed	45.2
## 136	14	42	Passed	42.4
## 137	55	24	Fail	37.4
## 138	19	76	Passed	67.0
## 139	31	83	Passed	40.8
## 140	50	81	Passed	48.6
## 141	83	80	Passed	51.4
## 142	8	39	Passed	50.4
## 143	50	35	Passed	48.2
## 144	93	92	Distinction	83.2
## 145	67	99	Passed	54.8
## 146	23	75	Passed	58.2
## 147	88	10	Passed	49.6
## 148	80	79	Distinction	77.8
## 149	29	50	Passed	65.4
## 150	50	24	Passed	44.4

```
# as.numeric(dataframe[c(4:8), ])
# rowMeans(dataframe[c(4:8), ])
```

5. Create a function that checks if the value is numeric or not and if the value is numeric it finds the min,max, mean, std and var of the given column. Else it prints a message to the user. Use the Result column and marks column to validate.

#Following is for the Result column

```
find_num <- function(y){
  y <- dataframe$Result
  for (i in y){
    x = is.numeric(i)
    if (x == TRUE){
      y1 <- min(dataframe$Result)
      y2 <- max(dataframe$Result)
      y3 <- mean(dataframe$Result)
      y4 <- sd(dataframe$Result)
      y5 <- var(dataframe$Result)

      return(c(y1, y2, y3, y4, y5))
    }
    else
      cat("The column is not numeric")
    {break}
  }
}
```

```
y <- dataframe$Result
variable <- find_num(y)
```

```
## The column is not numeric
```

```
print(variable)
```

```
## NULL
```

```
#Following is for the AvgMarks column
```

```
find_num <- function(y){
  y <- dataframe$AverageResult
  for (i in y){
    x = is.numeric(i)
    if (x == TRUE){
      y1 <- min(dataframe$AverageResult)
      y2 <- max(dataframe$AverageResult)
      y3 <- mean(dataframe$AverageResult)
      y4 <- sd(dataframe$AverageResult)
      y5 <- var(dataframe$AverageResult)

      return(c(y1, y2, y3, y4, y5))
    }
    else
      cat("The column is not numeric")
    {break}
  }
}

y <- dataframe$Result
variable <- find_num(y)
print(variable)
```

```
## [1] 21.00000 84.60000 50.57333 12.76721 163.00170
```

6. Create a column that stores the sum of the current and next rows subject marks. If it does not have a row ahead add the value from previous row.

```
# emp_var <- c()
#
# for (i in 1:nrow(dataframe)){
#   if (is.na(dataframe$Subject.1[i+1]) == F){
#     emp_vec <- append(emp_vec, (dataframe$Subject.1[i] + dataframe$Subject.1[i+1]))
#   }
#   else
#     emp_vec <- append(emp_vec, (dataframe$Subject.1[i] + dataframe$Subject.1[i-1]))
# }
#
# emp_vec
# dataframe$SumCurr <- emp_vec
```

#Second method

```
# emp_vec <- c()
#
# sum_curr <- function(y){
#   y <- dataframe$Subject.1
#   for (i in y){
#     z <- is.na(i+1)
#     if (z == FALSE){
#       y[i] <- y[i] + y[i+1]
#       emp_var <- append(emp_vec, y[i])
#     }
#     else
#       y[i] <- y[i] + y[i-1]
#       emp_var <- append(emp_vec, y[i])
#   }
# }
#
# y <- dataframe$Subject.1
# variable2 <- sum_curr(y)
# print(variable2)
#
# emp_vec
```