Question c

```
> pip <- apply(exam_data, c(1,3), sum)
> pip
          Timepoint
SubjectID  1  2   3
     1    35 37  37
     2    49 66  54
     3    15 15  54
     4    82 87  96
     5    48 64  74
```

The above image shows the overall total test score for each student for each month (timepoints, namely 1, 2 & 3)

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```
pip1 <- pip[ 1:1000 , 1]
pip2 <- pip[ 1:1000 , 2]
pip3 <- pip[ 1:1000 , 3]
```

Next, the above lines of code were used to create 3 different numeric vectors for the 3 different timepoints.

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```
> sort(pip1, decreasing = TRUE)
206 303 495 948 609
 99  98  98  98  97
 [ reached getOption("max.print") -- omitted 995 entries ]
> sort(pip2, decreasing = TRUE)
206 274 295 462 495
 99  99  99  99  99
 [ reached getOption("max.print") -- omitted 995 entries ]
> sort(pip3, decreasing = TRUE)
107 171 206 303 462
100 100 100 100 100
```

Finally, the sort function was used to produce the subjectID of the 5 students with the highest scores for the 3 months (timepoints). As can be seen, they are:

Timepoint 1: subjectID 206 - score 99 > subjectID 303, 495, 948 - score 98 > subjectID 609 – score 97

Timepoint 2: subjectID 206, 274, 295, 462, 495 – score 99

Timepoint 3: subjectID 107, 171, 206, 303, 462 – score 100