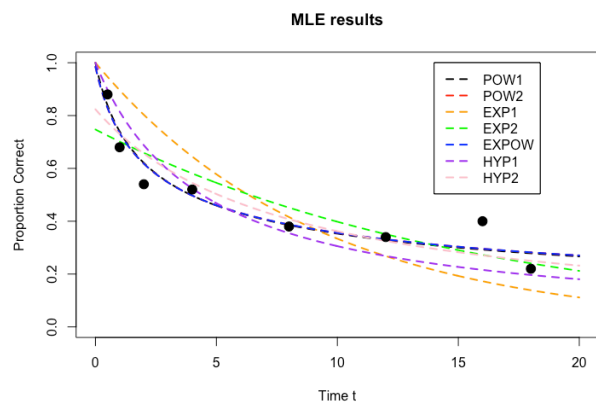


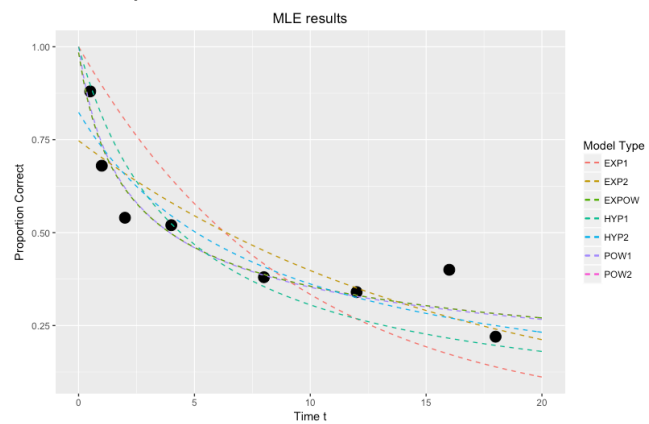
<Homework1>

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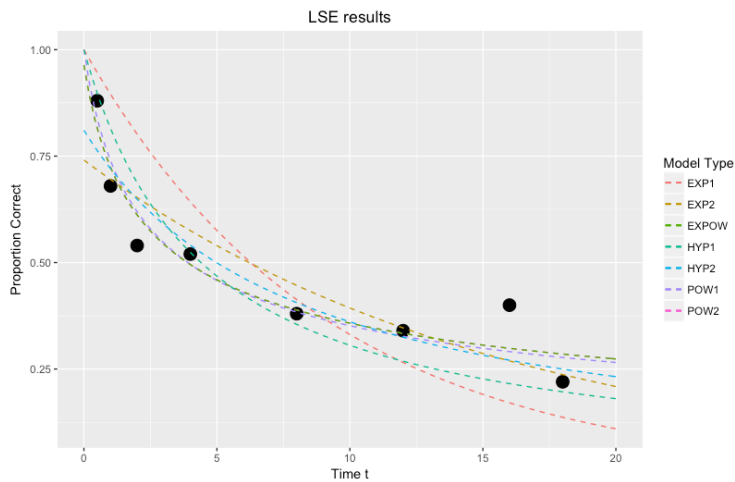
## Default MLE Graph



## MLE Graph w/ modified code



## LSE Graph



```
> print(mle_summary, 5)
Models par.V1 par.V2 par.V3 loglik r2
POW1 POW1 0.434 NA NA -247.360 0.910
POW2 POW2 0.985 0.424 NA -247.336 0.912
EXP1 EXP1 0.110 NA NA -273.857 0.347
EXP2 EXP2 0.747 0.063 NA -252.055 0.790
EXPOW EXPOW 0.985 0.000 0.424 -247.336 0.912
HYP1 HYP1 0.227 NA NA -254.208 0.738
HYP2 HYP2 0.824 0.128 NA -249.884 0.849
```

```
> print(lse_summary, 5)
Models par.1 par.2 par.3 sse r2
1 POW1 0.436 NA NA 0.0275 0.910
2 POW2 0.964 0.414 NA 0.0265 0.914
3 EXP1 0.111 NA NA 0.2005 0.347
4 EXP2 0.741 0.063 NA 0.0642 0.791
5 EXPOW 0.964 0.000 0.413 0.0265 0.914
6 HYP1 0.227 NA NA 0.0806 0.738
7 HYP2 0.811 0.125 NA 0.0461 0.850
```

The two methods yield similar results. In fact, the parameters and  $r^2$  value of HYP1 model are (almost) the same. The worst model is perhaps the EXP1 model seeing from the very low  $r^2$  value. The best fitting model, according to the  $r^2$  value, is the EXPOW model. However, the  $r^2$  values of POW1 and POW2 models are very close and they have fewer parameters than the EXPOW model. Thus, it would be safe to conclude that the POW1 model with a single parameter is the best model amongst the seven different models that we have.