```
/* load data */
DATA data;
        INFILE "/home/u63563888/435/homework6/prostat.dat";
        INPUT patient_id treatment survival_time status
                        age serum_haem tumour_size gleason_index;
RUN;


/* final model */
PROC PHREG DATA = data;
        CLASS treatment;
        MODEL survival_time*status(0) =
                        tumour_size gleason_index treatment;
        OUTPUT OUT = phreg_out DFBETA = dfbSize dfbIndex dfbTreat LMAX
= lmax;
RUN;


/* rank by survival time */
PROC RANK DATA = phreg_out (DROP = status age serum_haem)
                        OUT = ranked_data;
        VAR survival_time;
        RANKS surv_rank;
RUN;


/* plot */
ods graphics on;
goptions ROTATE=LANDSCAPE;

ods pdf file="/home/u63563888/435/homework7/hw7_lMax_plots.pdf";

PROC GPLOT DATA = ranked_data;
        TITLE "L-Max Plots";
        BUBBLE lmax*surv_rank=patient_id / BLABEL BSIZE=1 BCOLOR=bib;
        BUBBLE lmax*tumour_size=patient_id / BLABEL BSIZE=1
BCOLOR=bib;
        BUBBLE lmax*gleason_index=patient_id / BLABEL BSIZE=1
BCOLOR=bib;
        BUBBLE lmax*treatment=patient_id / BLABEL BSIZE=1 BCOLOR=bib;
RUN; QUIT;

ods pdf file="/home/u63563888/435/homework7/hw7_deltaBeta_plots.pdf";

PROC GPLOT DATA = ranked_data;
        TITLE "Delta-Beta Index Plots by Covariate";
        BUBBLE dfbSize*surv_rank=patient_id / BLABEL BSIZE=1
BCOLOR=bib;
        BUBBLE dfbIndex*surv_rank=patient_id / BLABEL BSIZE=1
BCOLOR=bib;
```

```
        BUBBLE dfbTreat*surv_rank=patient_id / BLABEL BSIZE=1
BCOLOR=bib;
RUN; QUIT;

ods pdf close;
ods graphics off;


ods pdf file="/home/u63563888/435/homework7/ranked_data.pdf";
PROC PRINT DATA = ranked_data; RUN;
ods pdf close;
```