Econ 533
Problem Set #2
Answer Sheets

Using the data set "hybrid.xls" from the last homework set and TSP, estimate both a probit and a logit model of the decision to purchase a hybrid vehicle as a function of all of the available explanatory variables.

1. **How do your parameter estimates and their statistical significances compare across the three models (i.e., including the LPM)?**

A copy of the output file associated with this homework is at the end of this answer sheet. The following table summarizes the parameter estimate (and p-value) associated with each model and variable. I have marked in red those parameters that are significantly different from zero using a 95% confidence level.

Variable	Linear Probability	Probit	Logit
Constant	0.734 (<0.001)	0.768 (0.052)	1.390 (0.038)
Male	-0.091 (0.001)	-0.287 (0.001)	-0.482 (0.001)
Cons	0.192 (<0.001)	0.603 (<0.001)	1.031 (<0.001)
Foreign	-0.034 (0.216)	-0.123 (0.181)	-0.196 (0.205)
Age	-0.00175 (0.039)	-0.00570 (0.045)	-0.00991 (0.039)
Costd	-0.281 (<0.001)	-0.934 (<0.001)	-1.596 (<0.001)
Gas	0.146 (<0.001)	0.492 (0.001)	0.808 (0.001)

Notice that, while the levels of the parameters are different comparing among the three models, they are consistent in terms of which coefficients are statistically significant and in terms of the indicated signs of the coefficients. We consistently find that males (male=1), older individuals, and those facing a higher cost premium for a hybrid vehicle are less likely to buy one, while individuals who belong to an environmental group (Cons=1) and those facing higher gas prices are more likely to buy a hybrid vehicle. Whether or not the vehicle is foreign made appears not to matter.

2. **How do the models compare in terms of what they say about which variables are most important in influencing the purchase decision?**

To get a sense of the importance of each of the variables, I have computed in the table below (for those variables that were statistically significant) the value of the coefficient times the range of the corresponding explanatory variable. This gives an indication of the ability of each variable to alter the probability of interest

Variable	Linear Probability	Probit	Logit
Male	-0.091	-0.287	-0.482
Cons	0.192	0.603	1.031
Age	-0.114	-0.370	-0.644
Costd	-0.843	-2.802	-4.788
Gas	0.161	0.541	0.889

These results suggest that the cost differential between the hybrid and non-hybrid has the biggest impact, followed by whether or not the individual belongs to an environmental group.

3. **For each of the two new models, estimate the predicted probability of purchasing a hybrid vehicle for *costd*=0 and *costd*=10, along with the standard deviation of each probability. As in the last homework set, hold the value of the other variables at their sample means. Compare the results from the three models in terms of these predictions.**

   Here are the resulting fitted probabilities:

Costd	Linear Probability	Probit	Logit
0	0.989 (0.045)	0.948 (0.016)	0.942 (0.015)
10	-1.822 (0.153)	0.623e-14 (0.270e-13)	0.00000189 (0.00000194)

The probit and logit models yield similar fitted probabilities and, unlike the LPM, the fitted probability when costd=10, while very small, lies in the unit interval for both probit and logit.

4. **For the probit and LPM (<u>not</u> the logit) model, estimate the marginal impact of gasoline prices on the probability of purchasing a hybrid (i.e., $\Pr\left[buy_i = 1\right]$) when gasoline prices are at**

   a. **The mean gasoline price (gas=2.31);**

   b. **A low level (gas = 1.80); and**

   c. **A high level (gas = 2.90).**

   In each case, assume that the remaining characteristics are held at their sample means. You should also compute the standard deviation of these marginal effects. How do these results compare in terms of the marginal effect of gasoline prices?

Gas	Linear Probability	Probit
2.31	0.146 (0.044)	0.179 (0.053)
1.80	0.146 (0.044)	0.156 (0.038)
2.90	0.146 (0.044)	0.194 (0.060)

While the LPM assumes that the marginal effect of gasoline is constant, the Probit model allows this marginal effect to vary with the characteristics of the situation. In particular, the marginal effect is highest for the last case, which (by the way) corresponds to an individual who has a fitted choice probability that is close to 50%.

5. **Estimate the change you would expect in the percentage of hybrid purchases if the government were to provide a $500 credit to individuals purchasing a hybrid vehicle.**

As the attached program indicates, we can compute this percentage using "sample enumeration", as discussed in class. Specifically, we simply compute the fitted probability of purchasing a hybrid for each person in our sample (both before and after the rebate) and compare the average of these calculations. In this case, the average probability of purchasing a hybrid is 0.370 before the credit and 0.514 after the credit, for a change of 0.144 (or 14.4%).

TSP Code:

```
?
?       Problem Set #1
?
?       The first step is to obtain and read in the requisite data
?
smpl    1 1000;
read    (file='hybrid.xls') BUY MALE CONS FOREIGN AGE COSTD GAS;
msd         BUY MALE CONS FOREIGN AGE COSTD GAS;
set     mmale    = @mean(2);
set     mcons    = @mean(3);
set     mforeign = @mean(4);
set     mage     = @mean(5);
set     mcostd   = @mean(6);
set     mgas     = @mean(7);
;
?
?       Question 1
?       The PROBIT and LOGIT models can be estimated directly using the
?       PROBIT and LOGIT commands.
?
PROBIT  BUY C MALE CONS FOREIGN AGE COSTD GAS;
LOGIT   BUY C MALE CONS FOREIGN AGE COSTD GAS;
?
?       Question 3:
?       In order to compute the fitted probabilities for the next two
logit and
?       Probit models, we need to run them each using the ML command.
?       I start with the logit model below.
?
frml  rhs a0 + a1*MALE + a2*CONS + a3*FOREIGN +a4*AGE + a5*COSTD
+a6*GAS;
frml    eq1 llik =     buy*log(exp(rhs)/(1 + exp(rhs)))
                 + (1-buy)*log(1/(1+exp(rhs)));
eqsub   eq1 rhs;
param   a0 0 a1 0 a2 0 a3 0 a4 0 a5 0 a6 0;
ml      eq1;
frml    rhsA1 a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN +a4*mAGE + a5*(0)
+a6*MGAS;
frml    rhsA2 a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN +a4*mAGE + a5*(10)
+a6*MGAS;
frml    eqa1 PFITA1  = exp(rhsA1)/(1 + exp(rhsA1));
frml    eqa2 PFITA2  = exp(rhsA2)/(1 + exp(rhsA2));
eqsub   eqa1 rhsA1;
eqsub   eqa2 rhsA2;
analyz  eqa1 eqa2;
?
?       Now for the probit model
?
frml    eq2 llik =     buy*log(cnorm(rhs))
                 + (1-buy)*log(1 - cnorm(rhs));
eqsub   eq2 rhs;
param   a0 0 a1 0 a2 0 a3 0 a4 0 a5 0 a6 0;
ml      eq2;
frml    eqb1 PFITb1  = cnorm(rhsA1);
frml    eqb2 PFITb2  = cnorm(rhsA2);
```

```
eqsub   eqb1 rhsA1;
eqsub   eqb2 rhsA2;
analyz  eqb1 eqb2;
?
?       Question 4:
?       In question 4, you are asked to estimate marginal effect of
gasoline
?       prices for three types of situations
?
frml  rhs4a a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN
                 + a4*mAGE + a5*mCOSTD +a6*(2.31);
frml  rhs4b a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN
                 + a4*mAGE + a5*mCOSTD +a6*(1.80);
frml  rhs4c a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN
                 + a4*mAGE + a5*mCOSTD +a6*(2.90);
frml    eqm4a mfita = norm(rhs4a)*a6;
frml    eqm4b mfitb = norm(rhs4b)*a6;
frml    eqm4c mfitc = norm(rhs4c)*a6;
eqsub   eqm4a rhs4a;
eqsub   eqm4b rhs4b;
eqsub   eqm4c rhs4c;
analyz  eqm4a eqm4b eqm4c;
?
?       Question 5:
?       In question 5, we need to compute the change in the fitted
choice
?       probabilities for individuals before and after a $500 rebate
?
fit5a   = cnorm(a0 + a1*MALE + a2*CONS + a3*FOREIGN +a4*AGE + a5*COSTD
+a6*GAS);
fit5b   = cnorm(a0 + a1*MALE + a2*CONS + a3*FOREIGN +a4*AGE + a5*(COSTD-
0.5) +a6*GAS);
fitdiff = fit5b - fit5a;
msd     fit5a fit5b fitdiff;
```

Output file

```
                    ------------------------------------
                    |        this copy licensed        |
                    |           for use by:            |
                    | TSP/GiveWin 5.0 User   #50AGT0054 |
                    ------------------------------------
                              TSP Version 5.0
                         ( 4/05/05) TSP/GiveWin  4MB
                    Copyright (C) 2005 TSP International
                            ALL RIGHTS RESERVED
                             02/10/08 6:29 PM
              In case of questions or problems, see your local TSP
              consultant or send a description of the problem and the
              associated TSP output to:
                             TSP International
                              P.O. Box 61015
                            Palo Alto, CA 94306
                                    USA
         PROGRAM
COMMAND  ***************************************************************
1  ?
1  ?       Problem Set #1
1  ?
1  ?       The first step is to obtain and read in the requisite data
1  ?
1  smpl    1 1000;
2  read    (file='hybrid.xls') BUY MALE CONS FOREIGN AGE COSTD GAS;
3  msd     BUY MALE CONS FOREIGN AGE COSTD GAS;
4  set     mmale    = @mean(2);
5  set     mcons    = @mean(3);
6  set     mforeign = @mean(4);
7  set     mage     = @mean(5);
8  set     mcostd   = @mean(6);
9  set     mgas     = @mean(7);
10  ;
10  ?
10  ?       Question 1
10  ?       The PROBIT and LOGIT models can be estimated directly using
    the
10  ?       PROBIT and LOGIT commands.
10  ?
10  PROBIT  BUY C MALE CONS FOREIGN AGE COSTD GAS;
11  LOGIT   BUY C MALE CONS FOREIGN AGE COSTD GAS;
12  ?
12  ?       Question 3:
12  ?       In order to compute the fitted probabilities for the next
    two logit and
12  ?       Probit models, we need to run them each using the ML
command.
12  ?       I start with the logit model below.
12  ?
12  frml rhs a0 + a1*MALE + a2*CONS + a3*FOREIGN +a4*AGE + a5*COSTD
    +a6*GAS;
13  frml    eq1 llik =     buy*log(exp(rhs)/(1 + exp(rhs)))
13                   + (1-buy)*log(1/(1+exp(rhs)));
14  eqsub   eq1 rhs;
15  param   a0 0 a1 0 a2 0 a3 0 a4 0 a5 0 a6 0;
16  ml      eq1;
17  frml    rhsA1 a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN +a4*mAGE +
```

```
    a5*(0) +a6*MGAS;
18  frml    rhsA2 a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN +a4*mAGE +
    a5*(10) +a6*MGAS;
19  frml    eqa1 PFITA1  = exp(rhsA1)/(1 + exp(rhsA1));
20  frml    eqa2 PFITA2  = exp(rhsA2)/(1 + exp(rhsA2));
21  eqsub   eqa1 rhsA1;
22  eqsub   eqa2 rhsA2;
23  analyz  eqa1 eqa2;
24  ?
24  ?       Now for the probit model
24  ?
24  frml    eq2 llik =     buy*log(cnorm(rhs))
24                   + (1-buy)*log(1 - cnorm(rhs));
25  eqsub   eq2 rhs;
26  param   a0 0 a1 0 a2 0 a3 0 a4 0 a5 0 a6 0;
27  ml      eq2;
28  frml    eqb1 PFITb1  = cnorm(rhsA1);
29  frml    eqb2 PFITb2  = cnorm(rhsA2);
30  eqsub   eqb1 rhsA1;
31  eqsub   eqb2 rhsA2;
32  analyz  eqb1 eqb2;
33  ?
33  ?       Question 4:
33  ?       In question 4, you are asked to estimate marginal effect of
    gasoline
33  ?       prices for three types of situations
33  ?
33  frml rhs4a a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN
33                   + a4*mAGE + a5*mCOSTD +a6*(2.31);
34  frml rhs4b a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN
34                   + a4*mAGE + a5*mCOSTD +a6*(1.80);
35  frml rhs4c a0 + a1*mMALE + a2*mCONS + a3*mFOREIGN
35                   + a4*mAGE + a5*mCOSTD +a6*(2.90);
36  frml    eqm4a mfita = norm(rhs4a)*a6;
37  frml    eqm4b mfitb = norm(rhs4b)*a6;
38  frml    eqm4c mfitc = norm(rhs4c)*a6;
39  eqsub   eqm4a rhs4a;
40  eqsub   eqm4b rhs4b;
41  eqsub   eqm4c rhs4c;
42  analyz  eqm4a eqm4b eqm4c;
43  ?
43  ?       Question 5:
43  ?       In question 5, we need to compute the change in the fitted
    choice
43  ?       probabilities for individuals before and after a $500 rebate
43  ?
43  fit5a   = cnorm(a0 + a1*MALE + a2*CONS + a3*FOREIGN +a4*AGE +
    a5*COSTD +a6*GAS);
44  fit5b   = cnorm(a0 + a1*MALE + a2*CONS + a3*FOREIGN +a4*AGE +
    a5*(COSTD-0.5) +a6*GAS);
45  fitdiff = fit5b - fit5a;
46  msd     fit5a fit5b fitdiff;
         EXECUTION
************************************************************************
*******

Current sample:  1 to 1000

                             Univariate statistics
                             =====================
```

```
Number of Observations: 1000

                     Mean        Std Dev        Minimum        Maximum
BUY               0.37000        0.48305        0.00000        1.00000
MALE              0.50100        0.50025        0.00000        1.00000
CONS              0.34700        0.47625        0.00000        1.00000
FOREIGN           0.39800        0.48973        0.00000        1.00000
AGE              51.75400       15.86497       25.00000       90.00000
COSTD             2.20167        0.71397        1.00494        3.99961
GAS               2.31259        0.30861        1.80053        2.89942


                      Sum       Variance       Skewness       Kurtosis
BUY             370.00000        0.23333        0.53933       -1.71255
MALE            501.00000        0.25025     -0.0040060       -2.00400
CONS            347.00000        0.22682        0.64380       -1.58870
FOREIGN         398.00000        0.23984        0.41739       -1.82945
AGE           51754.00000      251.69718        0.32608       -0.73829
COSTD          2201.67408        0.50975        0.32749       -0.70467
GAS            2312.59251       0.095242        0.16105       -1.11092


                                     Equation   1
                                     ============

                                     Probit Estimation

Working space used: 19201
                                STARTING VALUES

                        C           MALE           CONS        FOREIGN
VALUE             0.00000        0.00000        0.00000        0.00000


                      AGE          COSTD            GAS
VALUE             0.00000        0.00000        0.00000

F= 693.14718056  FNEW= 534.50662356  ISQZ=  0 STEP= 1.       CRIT=
284.83
F= 534.50662356  FNEW= 526.91330595  ISQZ=  0 STEP= 1.       CRIT=
14.352
F= 526.91330595  FNEW= 526.84837036  ISQZ=  0 STEP= 1.       CRIT=
.12903
F= 526.84837036  FNEW= 526.84836412  ISQZ=  0 STEP= 1.       CRIT=
.12474E-04

CONVERGENCE ACHIEVED AFTER   4 ITERATIONS


    8 FUNCTION EVALUATIONS.

     Dependent variable: BUY

  Number of observations = 1000     Scaled R-squared = .255375
 Number of positive obs. = 370      LR (zero slopes) = 264.215 [.000]
       Mean of dep. var. = .370000    Schwarz B.I.C. = 551.026
Sum of squared residuals = 175.855    Log likelihood = -526.848
               R-squared = .245634
```

Fraction of Correct Predictions = 0.742000

Parameter	Estimate	Standard Error	t-statistic	P-value
C	.767797	.394642	1.94555	[.052]
MALE	-.286969	.089190	-3.21752	[.001]
CONS	.602641	.093021	6.47853	[.000]
FOREIGN	-.122832	.091719	-1.33921	[.181]
AGE	-.569705E-02	.283883E-02	-2.00683	[.045]
COSTD	-.933780	.071529	-13.0546	[.000]
GAS	.491740	.146043	3.36709	[.001]

Standard Errors computed from analytic second derivatives (Newton)

dP/dX

	0	1
C	-0.22933	0.22933
MALE	0.085713	-0.085713
CONS	-0.18000	0.18000
FOREIGN	0.036688	-0.036688
AGE	0.0017016	-0.0017016
COSTD	0.27890	-0.27890
GAS	-0.14687	0.14687

Equation 2
============

MULTINOMIAL LOGIT ESTIMATION

Choice	Frequency	Fraction	
0	630	0.6300	(coefficients normalized to zero)
1	370	0.3700	

Working space used: 19239

STARTING VALUES

	C1	MALE1	CONS1	FOREIGN1
VALUE	0.00000	0.00000	0.00000	0.00000

	AGE1	COSTD1	GAS1
VALUE	0.00000	0.00000	0.00000

```
F= 693.14718056  FNEW= 536.12019544  ISQZ=  0 STEP= 1.       CRIT=
284.83
F= 536.12019544  FNEW= 526.45713911  ISQZ=  0 STEP= 1.       CRIT=
17.600
F= 526.45713911  FNEW= 526.20055245  ISQZ=  0 STEP= 1.       CRIT=
.50255
F= 526.20055245  FNEW= 526.20028530  ISQZ=  0 STEP= 1.       CRIT=
.53390E-03
F= 526.20028530  FNEW= 526.20028530  ISQZ=  0 STEP= 1.       CRIT=
.63073E-09
```

CONVERGENCE ACHIEVED AFTER 5 ITERATIONS

10 FUNCTION EVALUATIONS.

Dependent variable: BUY

Number of observations =	1000	Scaled R-squared =	.256582
Number of positive obs. =	370	LR (zero slopes) =	265.511 [.000]
Mean of dep. var. =	.370000	Schwarz B.I.C. =	550.377
Sum of squared residuals =	175.699	Log likelihood =	-526.200
R-squared =	.246257		
Number of Choices =	2000		
Fraction of Correct Predictions =	0.741000		

Parameter	Estimate	Standard Error	t-statistic	P-value
C1	1.39011	.669786	2.07546	[.038]
MALE1	-.481872	.151055	-3.19005	[.001]
CONS1	1.03129	.158730	6.49710	[.000]
FOREIGN1	-.196275	.154909	-1.26703	[.205]
AGE1	-.991312E-02	.480254E-02	-2.06414	[.039]
COSTD1	-1.59643	.129566	-12.3214	[.000]
GAS1	.807811	.248008	3.25720	[.001]

Standard Errors computed from analytic second derivatives (Newton)

dP/dX

	0	1
C	-0.24500	0.24500
MALE	0.084929	-0.084929
CONS	-0.18176	0.18176
FOREIGN	0.034593	-0.034593
AGE	0.0017472	-0.0017472
COSTD	0.28137	-0.28137
GAS	-0.14237	0.14237

MAXIMUM LIKELIHOOD ESTIMATION
=============================

EQUATION: EQ1

Working space used: 14891

STARTING VALUES

	A0	A1	A2	A3
VALUE	0.00000	0.00000	0.00000	0.00000

	A4	A5	A6
VALUE	0.00000	0.00000	0.00000

```
F= 693.14718056  FNEW= 536.12019544  ISQZ=  1 STEP= 1.       CRIT=
284.83
F= 536.12019544  FNEW= 526.43233720  ISQZ=  1 STEP= 1.       CRIT=
24.193
F= 526.43233720  FNEW= 526.20155103  ISQZ=  1 STEP= 1.       CRIT=
.47499
F= 526.20155103  FNEW= 526.20029903  ISQZ=  1 STEP= 1.       CRIT=
.26853E-02
```

F= 526.20029903 FNEW= 526.20028549 ISQZ= 1 STEP= 1.   CRIT=
.29152E-04
F= 526.20028549 FNEW= 526.20028531 ISQZ= 1 STEP= 1.   CRIT=
.38439E-06

CONVERGENCE ACHIEVED AFTER   6 ITERATIONS

22 FUNCTION EVALUATIONS.

Number of observations = 1000   Log likelihood = -526.200
Schwarz B.I.C. = 550.377

Parameter	Estimate	Standard Error	t-statistic	P-value
A0	1.39013	.669658	2.07588	[.038]
A1	-.481870	.151155	-3.18792	[.001]
A2	1.03129	.157145	6.56263	[.000]
A3	-.196279	.157986	-1.24238	[.214]
A4	-.991304E-02	.485937E-02	-2.03998	[.041]
A5	-1.59644	.128083	-12.4642	[.000]
A6	.807807	.250129	3.22957	[.001]

Standard Errors computed from covariance of analytic first derivatives (BHHH)

Results of Parameter Analysis
==============================

Parameter	Estimate	Standard Error	t-statistic	P-value
PFITA1	.941780	.014697	64.0818	[.000]
PFITA2	.188633E-05	.193646E-05	.974113	[.330]

Wald Test for the Hypothesis that the given set of Parameters are jointly zero:

CHISQ(2) =   33828.963   ; P-value = 0.00000

MAXIMUM LIKELIHOOD ESTIMATION
==============================

EQUATION: EQ2

Working space used: 14667

STARTING VALUES

	A0	A1	A2	A3
VALUE	0.00000	0.00000	0.00000	0.00000

	A4	A5	A6
VALUE	0.00000	0.00000	0.00000

F= 693.14718056 FNEW= 534.50662356 ISQZ= 1 STEP= 1.   CRIT=
284.83

```
F= 534.50662356  FNEW= 527.05712932  ISQZ=  1 STEP= 1.       CRIT=
18.258
F= 527.05712932  FNEW= 526.85033866  ISQZ=  1 STEP= 1.       CRIT=
.41047
F= 526.85033866  FNEW= 526.84839467  ISQZ=  1 STEP= 1.       CRIT=
.37074E-02
F= 526.84839467  FNEW= 526.84836479  ISQZ=  1 STEP= 1.       CRIT=
.54630E-04
F= 526.84836479  FNEW= 526.84836414  ISQZ=  1 STEP= 1.       CRIT=
.11477E-05

CONVERGENCE ACHIEVED AFTER   6 ITERATIONS


   22 FUNCTION EVALUATIONS.

Number of observations = 1000     Log likelihood = -526.848
        Schwarz B.I.C. = 551.026
```

Parameter	Estimate	Standard Error	t-statistic	P-value
A0	.767833	.394656	1.94558	[.052]
A1	-.286967	.089204	-3.21696	[.001]
A2	.602646	.092637	6.50547	[.000]
A3	-.122830	.093401	-1.31508	[.188]
A4	-.569706E-02	.288447E-02	-1.97508	[.048]
A5	-.933791	.069453	-13.4450	[.000]
A6	.491732	.147354	3.33707	[.001]

Standard Errors computed from covariance of analytic first derivatives (BHHH)

Results of Parameter Analysis
=============================

Parameter	Estimate	Standard Error	t-statistic	P-value
PFITB1	.948092	.016005	59.2370	[.000]
PFITB2	.622797E-14	.269671E-13	.230947	[.817]

Wald Test for the Hypothesis that the given set of Parameters are jointly zero:

CHISQ(1) =   3509.0210   ; P-value = 0.00000

Results of Parameter Analysis
=============================

Parameter	Estimate	Standard Error	t-statistic	P-value
MFITA	.178807	.053339	3.35225	[.001]
MFITB	.155537	.038456	4.04458	[.000]
MFITC	.194248	.060467	3.21247	[.001]

Wald Test for the Hypothesis that the given set of Parameters are jointly zero:

CHISQ(2) =   147.19683   ; P-value = 0.00000

Univariate statistics
=====================

Number of Observations: 1000

	Mean	Std Dev	Minimum	Maximum
FIT5A	0.37029	0.23591	0.0060728	0.90945
FIT5B	0.51462	0.25141	0.020626	0.96440
FITDIFF	0.14433	0.040801	0.014553	0.18459

	Sum	Variance	Skewness	Kurtosis
FIT5A	370.29412	0.055652	0.31993	-0.96971
FIT5B	514.62495	0.063205	-0.12110	-1.10442
FITDIFF	144.33083	0.0016647	-1.06431	0.26719

****
****

END OF OUTPUT.

```
  MEMORY USAGE:    ITEM:    DATA ARRAY  TOTAL MEMORY
                  UNITS:  (4-BYTE WORDS) (MEGABYTES)
  MEMORY ALLOCATED         :    500000       4.0
  MEMORY ACTUALLY REQUIRED :     35895       2.2
  CURRENT VARIABLE STORAGE :     18407
```