// Bai toan cai ba lo 1

// Moi do vat co so luong khong han che

// Giai bang phuong phap THAM AN

```c
#include <stdio.h>

#include <malloc.h>

#include <string.h>


typedef struct {

        char TenDV[20];

        float TL, GT;

        int PA;

}DoVat;


DoVat * ReadFromFile(float *W, int *n){

    FILE *f;

    f = fopen("CaiBalo1.INP", "r");

    fscanf(f, "%f",W); // Xac dinh trong luong Ba lo

        DoVat *dsdv;

        dsdv=(DoVat*)malloc(sizeof(DoVat));

        int i=0;

        while (!feof(f)){

          fscanf(f, "%f%f",&dsdv[i].TL,&dsdv[i].GT);
```

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        fgets(dsdv[i].TenDV,20,f);

        dsdv[i].TenDV[strlen(dsdv[i].TenDV)-1]='\0';

        dsdv[i].PA=0;

        i++;

        dsdv=(DoVat*)realloc(dsdv, sizeof(DoVat)*(i+1));

    }        *n=i;

    fclose(f);

    return dsdv;

}

void swap(DoVat *x, DoVat *y){

        DoVat Temp;

        Temp = *x;

        *x  = *y;

        *y  = Temp;

}


void BubbleSort(DoVat *dsdv, int n){

        int i,j;

        for(i=0; i<=n-2; i++)

          for (j=n-1; j>=i+1; j--){

                float DGJ = dsdv[j].GT/dsdv[j].TL;

                float DGJ_1 = dsdv[j-1].GT/dsdv[j-1].TL;

                if (DGJ>DGJ_1)
```

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                swap(&dsdv[j],&dsdv[j-1]);

        }

}


void InDSDV(DoVat *dsdv ,int n, float W){

        int i;

        float TongTL=0.0, TongGT=0.0;

        printf("|---|--------------------|---------|---------|---------|---------|\n");

        printf("|%-3s|%-20s|%-9s|%-9s|%-9s|%-9s|\n", "STT", "     Ten Do Vat
","T. Luong", "Gia Tri", "Don Gia", "P. An");

        printf("|---|--------------------|---------|---------|---------|---------|\n");

        for(i=0;i<n;i++){

                printf("|%-3d",i+1);

                printf("|%-20s",dsdv[i].TenDV);

                printf("|%-9.1f",dsdv[i].TL);

                printf("|%-9.1f",dsdv[i].GT);

                printf("|%-9.1f",dsdv[i].GT/dsdv[i].TL);

                printf("|%-9d|\n",dsdv[i].PA);

                TongTL=TongTL+dsdv[i].PA * dsdv[i].TL;

                TongGT=TongGT+dsdv[i].PA * dsdv[i].GT;

        }

        printf("|---|--------------------|---------|---------|---------|---------|\n");

        printf("Trong luong cua ba lo= %9.1f\n",W);
```

```c
        printf("Tong trong luong= %9.1f, Tong gia tri= %9.1f\n", TongTL,
        TongGT);

}


void Greedy(DoVat *dsdv,int n, float W){

  int i;

  for(i= 0; i<n; i++) {

    dsdv[i].PA= (W/dsdv[i].TL);

    W = W-dsdv[i].PA * dsdv[i].TL;

  }

}


int main(){

        int n;

        float W;

        DoVat *dsdv;

        dsdv=ReadFromFile(&W, &n);

    BubbleSort(dsdv,n);

        Greedy(dsdv,n,W);

        InDSDV(dsdv,n,W);

        free(dsdv);

        return 0;

}
```