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//Bai toan cai ba lo 1

// Moi do vat co so luong khong han che

// Du lieu cho trong file D://Balo.INP

#include <stdio.h>

typedef struct {

    char TenDV[20];

    int TL, GT, PA;

} DoVat;

typedef int bang[50][100]; // Ba lo co trong luong toi da 99 va co toi da 50 do vat

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

    FILE *f;

    f=fopen("D://Balo.INP", "r");

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

    DoVat *dsdv;

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

    int i=0;

    while (!feof(f)){

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

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

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

        dsdv[i].PA=0;

        i++;

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

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    }

    *n=i;

fclose(f);

return dsdv;

}

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

    int i,TongTL=0, TongGT=0;

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

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

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

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

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

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

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

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

        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= %d\n",W);
}

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        printf("Tong trong luong= %d, Tong gia tri= %d\n", TongTL, TongGT);
    }

void TaoBang(DoVat *dsdv,int n,int W, bang F,bang X){
    int xk, yk, k;
    int FMax, XMax, V;

    // Dien hàng dau tien cua hai bang

    for(V= 0; V<=W; V++) {
        X[0][V] = V/dsdv[0].TL;
        F[0][V] = X[0][V] * dsdv[0].GT;
    }

    // Dien các dòng còn lại

    for(k= 1; k<n; k++)
        for(V=0; V<=W; V++) {
            FMax = F[k-1][V] ;
            XMax = 0;
            yk = V/dsdv[k].TL;
            for(xk = 1; xk<=yk; xk++)
                if(F[k-1][V-xk*dsdv[k].TL]+xk*dsdv[k].GT>FMax){
                    FMax=F[k-1][V-xk*dsdv[k].TL]+xk*dsdv[k].GT;
                }
        }
    }
}

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        XMax= xk;

    }

    F[k][V] = FMax;
    X[k][V] = XMax;

}

}

void InBang(int n, int W, bang F, bang X){
    int V, k;
    for(k=0; k<n; k++){
        for(V=0; V<=W; V++)
            printf("%4d%2d",F[k][V], X[k][V]);
        printf("\n");
    }
}

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void TraBang(DoVat *dsdv, int n, int W, bang X) {
    int k, V;
    V = W;
    for(k= n-1; k>=0; k--) {
        dsdv[k].PA = X[k][V];
        V = V - X[k][V] * dsdv[k].TL;
    }
}

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}  
}
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int main(){  
    int n, W;  
    bang X,F;  
    DoVat *dsdv;  
    dsdv=ReadFromFile(&W, &n);  
    TaoBang(dsdv,n,W,F,X);  
    InBang(n,W,F,X);  
    TraBang(dsdv,n,W,X);  
    InDSDV(dsdv,n,W);  
    free(dsdv);  
    return 0;  
}
```