```c
/*##############################################################*/
/*HW05_HASAN_MEN_131044009_part1.c                              */
/*_____________________________                                 */
/* Olusturan : HASAN MEN  23-Mart-2015                          */
/*                                                              */
/*Tanım                                                         */
/*_____________                                                 */
/*Ilk konumlari ve hizlarina gore  araclarin anlık hareket      */
/*durumunu bulan bir program                                    */
/*Girdiler:                                                     */
/*  -name1,name2: arac isimleri                                 */
/*  -speed1,speed2 : baslangic hizlari                          */
/*  -weight1,weight2 : arac agirliklari                         */
/*Ciktilar:                                                     */
/*  -Carpisma baslangıcından sonuna hareketler                  */
/*##############################################################*/


#include <stdio.h>

#define ROADLENGTH 50   /* max genisligi */
#define MINROAD 0       /* minimum yol araligi  0<= yol<= 50 */

/* carpma durumlari icin yeni turler */
typedef enum
    {PLAY,CRASH,END}
    object_state;

/* foksiyon prototipleri */
void make_move( char *object1,double *position1,double *speed1,int weight1,
                char *object2,double *position2,double *speed2, int weight2,
                object_state *game_state);

double car_crash_time(  double position1, double position2,
                        double speed1,double speed2);

void print_game_state(  char object1,double position1,
                        char object2,double position2, object_state game_state);

int main()
{
    /* ana fonksiyon baslangici */
    char name1,name2;   /* arac isimleri*/
    double speed1,speed2;   /* baslangic hizlari */
    int weight1,weight2;    /* arac agirliklari */
    double position1=1;     /* ilk pozisyonlar-1.arac en basta  */
    double position2=50;    /*  en sonda*/
    /* degiskenlerin sonu */


    /* simulasyon aktiflesti */
    object_state state=PLAY;

    /* kullanıcıdan degerleri alinmasi */
    printf("Enter First Car Name / Speed / Weight (left to right) ");
    scanf("%c%lf%d",&name1,&speed1,&weight1);
    printf("Enter Second Car Name / Speed / Weight (left to right) ");
    scanf(" %c%lf%d",&name2,&speed2,&weight2);

    printf("%c %.2f %d\n",name1,speed1,weight1);
    printf("%c %.2f %d\n",name2,speed2,weight2);


    /* haraket fonksiyonunun cagirilmasi */
    make_move(  &name1,&position1,&speed1,weight1,
                &name2,&position2,&speed2,weight2,&state);

    return 0;
    /* ana fonksiyon sonu */
}

/*##############################################################*/
/*  Araclarin ilk bilgilerini aralarak kac adimda carpisacaklarini  */
/*  zamana bagli hareketlerini ve carpma sonrasi ortak kutlenin     */
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/*  hareketini cizen fonksiyonumuz                                  */
/*                                                                  */
/*  Girdi:                                                          */
/*  ------  *object(x)  : arac isimleri - pointer olarak            */
/*  ------  *position(x) : araclarin pozistonlari - pointer olarak  */
/*  ------  *speed(x)   : baslangic hizlari - pointer               */
/*  ------  weight  : ortak kutlenin hizini bulmak icin agirliklar  */
/*                                                                  */
/*  Cikti:                                                          */
/*  ------araclarin carpisma oncesi ve sonrasi adim adim hareketleri*/
/*##################################################################*/

void make_move( char *object1,double *position1,double *speed1,int weight1,
                char *object2,double *position2,double *speed2, int weight2,
                object_state *game_state)
{
    /* make_move fonksiyonu baslangici */

    int i,time; /* i: sayac  , time : ne zaman carpisacaklari */
    double newspeed;    /* ortak kutlenin yeni hizi */
    /* degiskenlerin sonu */

    time=car_crash_time(*position1,*position2,*speed1,*speed2);

    /* simulasyon crash olana kadar araclarin birbirlerin yaklasmalari */
    for(i=0;i<=time;i++)
    {
        /* pritn_game_State fonk ile adim adim yazdirma */
        print_game_state(*object1,*position1,*object2,*position2,*game_state);

        /* aradaki mesafe 1 olana kadar hızlar degisir.1olunca carpisma */
        /* durumuna gecilir.                                            */
        if(*position2-*position1!=1)
        {
        *position1 += *speed1;  /* pozisyonlar hizlara gore degisir */
        *position2 += *speed2;
        }

    }

    /* yeni hizin bulunmasi - temel fizik kuralina gore     */
    /* Kural = (m1v1 + m2v2)/(m1+m2)                        */
    newspeed = ((*speed1)*weight1+(*speed2)*weight2)/(double)(weight1+weight2);


    /* yol sinirlarina yaklasana kadar ortak hareeket */
    do{
        *game_state=CRASH;      /* carpisma durumu  */
        *object1='X';   /* yeni cismimiz (ortak kutle */

        /* chash durumuna gore print_game_cagirilmasi*/
        print_game_state(*object1,*position1,*object2,*position2,*game_state);
        *position1 += newspeed;
    }while(*position1>=MINROAD && *position1<ROADLENGTH);


    /* eger sinirlar asilirsa 0 ve 50ye geri donulup bitis aninin belirtilmesi*/
    if(*position1<=MINROAD)
        *position1=MINROAD;
    else if(*position1>=ROADLENGTH)
        *position1=ROADLENGTH;

        /* oyun durumu 'end' ve son adim icin print_game_state cagirilir */
        *game_state=END;
        *object1='X';
        print_game_state(*object1,*position1,*object2,*position2,*game_state);

        /* make_move fonksitonu bitisi */
}


/*#########################################################################*/
/* araclarin pozisyon ve hizlarina gore kacinci adimda carpisacaklarini     */
/* bulup make_move fonksiyonuna return eder                                 */
```

```
/*  Girdi:                                                              */
/*  ----- position1,position2 : araclarin ilk yerleri                   */
/*  ----- speed1,speed2 : araclarin ilk hizlari                         */
/*  Cıktı                                                               */
/*  ----- carpisma sureleri (return edildi)                             */
/*#########################################################################*/
double car_crash_time(  double position1, double position2,
                        double speed1,double speed2)
{
        return (position2-position1)/(speed1-speed2);
}


/*#########################################################################*/
/* make move den gelen bilgilere gore adim adim hareketlerin ekrana        */
/*basilmasi , oyun durumu en buyuk etkenimizdir                            */
/*  Girdi:                                                                 */
/*  ----- object1,object2: arac isimleri                                  */
/*  ----- NOT: end ve crash icin object1 'X' i kullanir.Object2 iptaldir.  */
/*  ----- position1, position2 : araclarin yerleri                        */
/*  ----- NOT: ortak kutle yeri position1 de yer alir                     */
/*  ----- game_State : simulasyon durmumu                                 */
/*  Cıktı                                                                  */
/*  ----- adim adim hareketler                                            */
/*#########################################################################*/

void print_game_state(  char object1,double position1,
                        char object2,double position2, object_state game_state)
{
    /* print_game_state fonksiyonu baslangici */
    int outl,outr,in;   /* oultleft,outright : sol,sag  bosluklar*/
    int inspace=position2-position1-1;  /* aradaki bosluklar */
    /* degiskenlerin sonu */

    /* simulasyon aktif ise pozisyonlara gore bosluk ve isimleri basilmasi */
    if(game_state==PLAY)
    {
        for(outl=1;outl<position1;outl++)
            printf("_");
        printf("%c",object1);

        for(in=1;in<=inspace;in++)
            printf("_");
        printf("%c",object2);

        for(outr=position2;outr<ROADLENGTH;outr++)
            printf("_");

        printf("\n12345678901234567890123456789012345678901234567890\n");
    }

    /* carpisma durumunun basilmasi */
    else if(game_state==CRASH)
    {

    for(outl=1;outl<=position1;outl++)
        printf("_");
    printf("%c",object1);

    for(outr=1;outr<ROADLENGTH-position1;outr++)
        printf("_");

    printf("\n12345678901234567890123456789012345678901234567890\n");

    }

    /* bitis aninin basilmasi */
    else if(game_state==END)
    {

    for(outl=1;outl<position1;outl++)
        printf("_");
    printf("%c",object1);

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223       for(outr=1;outr<ROADLENGTH-position1;outr++)
224           printf("_");
225
226       printf("\n12345678901234567890123456789012345678901234567890\n");
227       }
228       /* print_game_state fonksiyonunun sonu */
229   }
230
231   /*              HW05_HASAN_MEN_131044009_part1.c    sonu            */
```