```
void shadow()
{
    int i,j,r,count=0,avg,sum=0;
    int px,py,p1x,p1y;
    r=257;
    do
    {   for(i=0; i<width; i++)
        {   for(j=0; j<height; j++)
            {   if(b[i][j]==r)
                {   sum=sum+output[i][j];
                    count=count+1;}}}
        avg=sum/count;
        if(avg>= 245 && avg <=255)  //black region
        {   px=i;
            py=j;
            for(i=0; i<width; i++)
            {   for(j=0; j<height; j++)
                {   if(b[i][j]==r)
                    {   if (j<py)
                        {   px=i;
                            py=j;}  //left most pixel
                        else break;}}}
            if(b[i-1][j]==0)
            {   p1x=i-1;        p1y=j;          flag[i-1][j]=1; }
            else if(b[i+1][j]==0)
            {   p1x=i+1;        p1y=j;          flag[i+1][j]=1; }
            else if (b[i][j-1]==0)
            {   p1x=i;          p1y=j-1;        flag[i][j-1]=1; }
            else if (b[i][j+1]==0)
            {   p1x=i;          p1y=j+1;        flag[i][j+1]=1; }
            dv=(((p1x-px)^2)+(p1y-py)^2))^1/2;
            do
            {   f=0;
                if(b[i-1][j]==0 && flag[i][j]==0)
                {   pp1x=i-1;   pp1y=j; }
                else if(b[i+1][j]==0 && flag[i][j]==0)
                {   pp1x=i+1;   pp1y=j; }
                else if (b[i][j-1]==0 && flag[i][j]==0)
                {   pp1x=i;     pp1y=j-1;}
                else if (b[i][j+1]==0 && flag[i][j]==0)
                {   pp1x=i;     pp1y=j+1;}
                if(b[i-1][j]==0)
                {   pp2x=i-1;   pp2y=j; flag[i-1][j]=1; }
                else if(b[i+1][j]==0)
                {   pp2x=i+1;   pp2y=j; flag[i+1][j]=1; }
                else if (b[i][j-1]==0)
                {   pp2x=i;     pp2y=j-1;   flag[i][j-1]=1; }
                else if (b[i][j+1]==0)
                {   pp2x=i;     pp2y=j+1;   flag[i][j+1]=1; }
                dv1=(((pp1x-ppx)^2)+(pp1y-ppy)^2))^1/2;
                if (dv1>dv)     //vertival length
                {   dv=dv1;     f=1;        }
            }while(f=1);}

        sum=0;
        count=0;
        for(i=0; i<width; i++)
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        {   for(j=0; j<height; j++)
            {   if(b[i][j]==r)
                    sum=sum+output[i][j];
                    count=count+1;
            }
        }
        avg=sum/count;
        if(avg>= 245 && avg <=255)  //black region
        {   px=i;   py=j;
            for(i=0; i<width; i++)
            {   for(j=0; j<height; j++)
                {   if(b[i][j]==r)
                    {   if (i<px)
                        {   px=i;       py=j;}  //left most pixel   }
                        else  break;    }   }   }
            if(b[i-1][j]==0)
            {   p1x=i-1;    p1y=j;  flag[i-1][j]=1; }
            else if(b[i+1][j]==0)
            {   p1x=i+1;    p1y=j;  flag[i+1][j]=1; }
            else if (b[i][j-1]==0)
            {   p1x=i;      p1y=j-1;    flag[i][j-1]=1; }
            else if (b[i][j+1]==0)
            {   p1x=i;      p1y=j+1;    flag[i][j+1]=1; }
            dh=(((p1x-px)^2)+(p1y-py)^2))^1/2;
            do
            {   f=0;
                if(b[i-1][j]==0 && flag[i][j]==0)
                {   pp1x=i-1;   pp1y=j; }
                else if(b[i+1][j]==0 && flag[i][j]==0)
                {   pp1x=i+1;   pp1y=j; }
                else if (b[i][j-1]==0 && flag[i][j]==0)
                {   pp1x=i;     pp1y=j-1;}
                else if (b[i][j+1]==0 && flag[i][j]==0)
                {   pp1x=i;     pp1y=j+1;}
                if(b[i-1][j]==0)
                {   pp2x=i-1;       pp2y=j;     flag[i-1][j]=1; }
                else if(b[i+1][j]==0)
                {   pp2x=i+1;       pp2y=j;     flag[i+1][j]=1; }
                else if (b[i][j-1]==0)
                {   pp2x=i;         pp2y=j-1;   flag[i][j-1]=1; }
                else if (b[i][j+1]==0)
                {   pp2x=i;         pp2y=j+1;   flag[i][j+1]=1; }
                dh1=(((pp1x-ppx)^2)+(pp1y-ppy)^2))^1/2;
                if (dh1>dh)     //vertival length
                {   dh=dh1; f=1;    }
            }while(f=1);
        }
    }while();
}
```