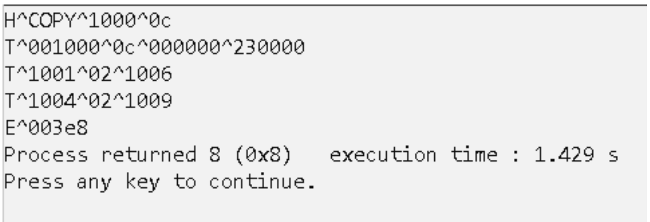
PROGRAM(SINGLE PASS ASSEMBLER)

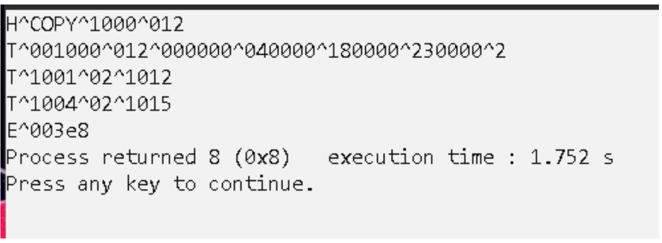
```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
void main()
{
 FILE *f1,*f2,*f3,*f4,*f5;
 int lc,sa,i=0,j=0,m[10],pgmlen,len,k,len1,l=0;
 char name[10],opnd[10],la[10],mne[10],s1[10],mne1[10],opnd1[10];
 char lcs[10],ms[10];
 char sym[10],symaddr[10],obj1[10],obj2[10],s2[10],q[10],s3[10];
 f1=fopen("input.txt","r");
 f2=fopen("optab.txt","r");
 f3=fopen("symtab.txt","w+");
 f4=fopen("symtab1.txt","w+");
 f5=fopen("output.txt","w+");
 fscanf(f1,"%s%s%s",la,mne,opnd);
 if(strcmp(mne,"START")==0)
 {
  sa=atoi(opnd);
  strcpy(name,la);
  lc=sa;
 }
 strcpy(s1,"*");
 fscanf(f1,"%s%s%s",la,mne,opnd);
 while(strcmp(mne,"END")!=0)
 {
  if(strcmp(la,"-")==0)
  {
   fscanf(f2,"%s%s",mne1,opnd1);
   while(!feof(f2))
   {
             if(strcmp(mne1,mne)==0)
    {
     m[i]=lc+1;
     fprintf(f3,"%s\t%s\n",opnd,s1);
     fprintf(f5,"%s\t0000\n",opnd1);
     lc=lc+3;
     i=i+1;
     break;
    }
   else
     fscanf(f2,"%s%s",mne1,opnd1);
   }
  }
  else
  {
   fseek(f3,SEEK_SET,0);
   fscanf(f3,"%s%s",sym,symaddr);
   while(!feof(f3))
   {
   if(strcmp(sym,la)==0)
   {
    sprintf(lcs,"%d",lc);
    fprintf(f4,"%s\t%s\n",la,lcs);
    sprintf(ms,"%d",m[j]);
    j=j+1;
   fprintf(f5,"%s\t%s\n",ms,lcs);
               i=i+1;
   break;
  }
  else
    fscanf(f3,"%s%s",sym,symaddr);
               }
  if(strcmp(mne,"RESW")==0)
    lc=lc+3*atoi(opnd);
  else if(strcmp(mne,"BYTE")==0)
  {
    strcpy(s2,"-");
    len=strlen(opnd);
                lc=lc+len-2;
    for(k=2;k<len;k++)
    {
     q[l]=opnd[k];
     l=l+1;
    }
               fprintf(f5,"%s\t%s\n",q,s2);
   break;
  }
 else if(strcmp(mne,"RESB")==0)
    lc=lc+atoi(opnd);
 else if(strcmp(mne,"WORD")==0)
 {
  strcpy(s3,"#");
  lc=lc+3;
  fprintf(f5,"%s\t%s\n",opnd,s3);
  break;
 }
}
fseek(f2,SEEK_SET,0);
fscanf(f1,"%s%s%s",la,mne,opnd);
}
fseek(f5,SEEK_SET,0);
pgmlen=lc-sa;
printf("H^%s^%d^0%x\n",name,sa,pgmlen);
printf("T^");
printf("00%d^0%x",sa,pgmlen);
fscanf(f5,"%s%s",obj1,obj2);
while(!feof(f5))
{
 if(strcmp(obj2,"0000")==0)
 printf("^%s%s",obj1,obj2);
 else if(strcmp(obj2,"-")==0)
 {
  printf("^");
  len1=strlen(obj1);
  for(k=0;k<len1;k++)
                printf("%d",obj1[k]);
 }
 else if(strcmp(obj2,"#")==0)
 {
  printf("^");
  printf("%s",obj1);
 }
```

```
  fscanf(f5,"%s%s",obj1,obj2);
 }
 fseek(f5,SEEK_SET,0);
 fscanf(f5,"%s%s",obj1,obj2);
 while(!feof(f5))
 {
  if(strcmp(obj2,"0000")!=0)
  {
   if(strcmp(obj2,"-")!=0)
   {
    if(strcmp(obj2,"#")!=0)
    {
     printf("\n");
     printf("T^%s^02^%s",obj1,obj2);
    }
}
}
fscanf(f5,"%s%s",obj1,obj2);
}
printf("\nE^00%x",sa);
}
```



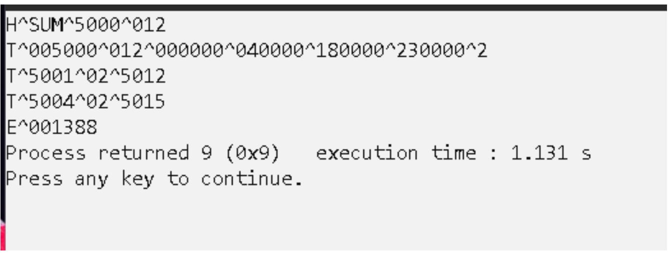
```
H^COPY^1000^0c
T^001000^0c^000000^230000
T^1001^02^1006
T^1004^02^1009
E^003e8
Process returned 8 (0x8)   execution time : 1.429 s
Press any key to continue.
```

1OP



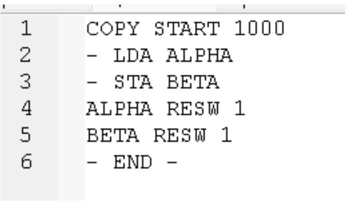
```
H^COPY^1000^012
T^001000^012^000000^040000^180000^230000^2
T^1001^02^1012
T^1004^02^1015
E^003e8
Process returned 8 (0x8)   execution time : 1.752 s
Press any key to continue.
```

2OP



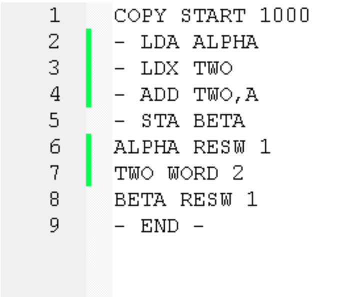
```
H^SUM^5000^012
T^005000^012^000000^040000^180000^230000^2
T^5001^02^5012
T^5004^02^5015
E^001388
Process returned 9 (0x9)   execution time : 1.131 s
Press any key to continue.
```

3OP



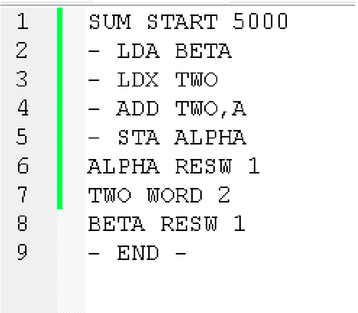
```
COPY START 1000
- LDA ALPHA
- STA BETA
ALPHA RESW 1
BETA RESW 1
- END -
```

1INP



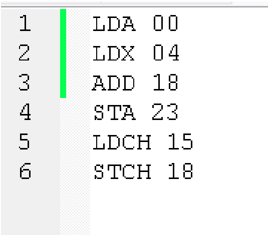
```
COPY START 1000
- LDA ALPHA
- LDX TWO
- ADD TWO,A
- STA BETA
ALPHA RESW 1
TWO WORD 2
BETA RESW 1
- END -
```

2INP



```
SUM START 5000
- LDA BETA
- LDX TWO
- ADD TWO,A
- STA ALPHA
ALPHA RESW 1
TWO WORD 2
BETA RESW 1
- END -
```

3INP



```
LDA 00
LDX 04
ADD 18
STA 23
LDCH 15
STCH 18
```

OPTAB