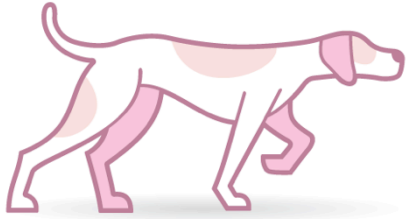


Pointer



Suhap SAHIN
Onur GÖK

Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    int toplam = 150;
```

```
    short int yas = 17;
```

```
    double ortalama = 14;
```

```
    return 0;
```

```
}
```

Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    int toplam = 150;
```

```
    short int yas = 17;
```

```
    double ortalama = 14;
```

```
    printf("toplam: %d\n", toplam);
```

```
    printf("yas: %d\n", yas);
```

```
    printf("ortalama: %f\n", ortalama);
```

```
    return 0;
```

```
}
```

Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    int toplam = 150;
```

```
    short int yas = 17;
```

```
    double ortalama = 14;
```

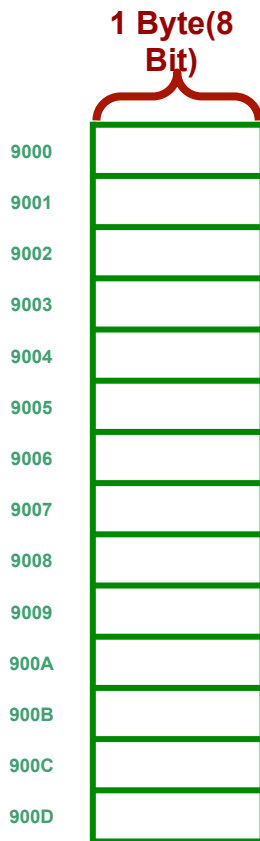
```
    printf("toplam: %d\n", toplam);
```

```
    printf("yas: %d\n", yas);
```

```
    printf("ortalama: %f\n", ortalama);
```

```
    return 0;
```

```
}
```



Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    int toplam = 150;
```

```
    short int yas = 17;
```

```
    double ortalama = 14;
```

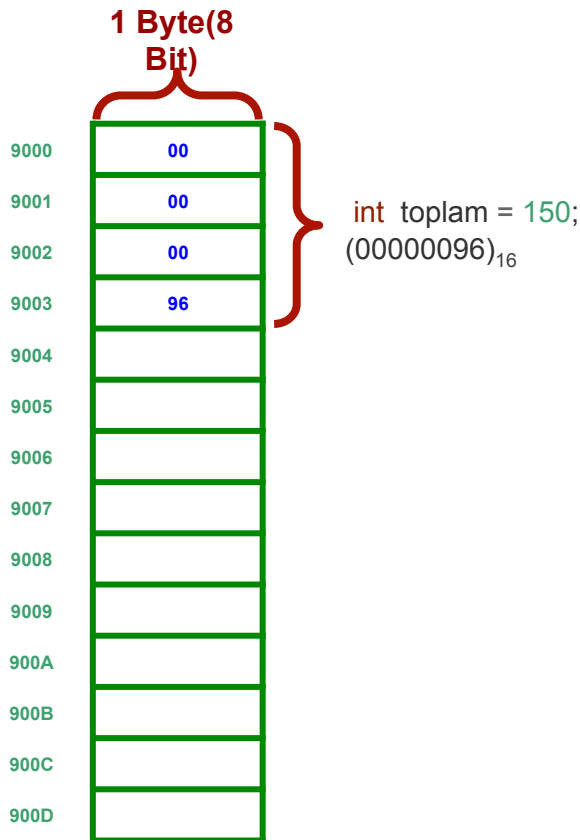
```
    printf("toplam: %d\n", toplam);
```

```
    printf("yas: %d\n", yas);
```

```
    printf("ortalama: %f\n", ortalama);
```

```
    return 0;
```

```
}
```



(150)₁₀=

Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    int toplam = 150;
```

```
    short int yas = 17;
```

```
    double ortalama = 14;
```

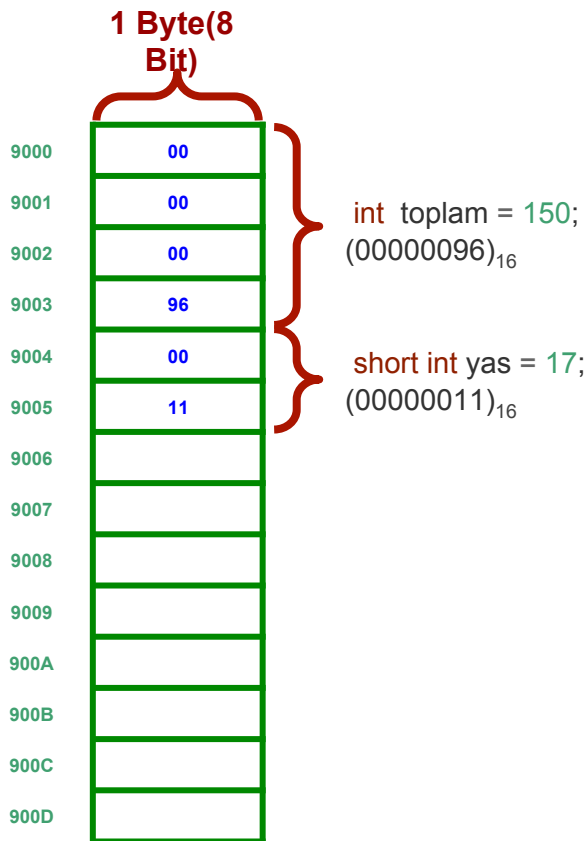
```
    printf("toplam: %d\n", toplam);
```

```
    printf("yas: %d\n", yas);
```

```
    printf("ortalama: %f\n", ortalama);
```

```
    return 0;
```

```
}
```



(150)₁₀=

(17)₁₀=

Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    int toplam = 150;
```

```
    short int yas = 17;
```

```
    double ortalama = 14;
```

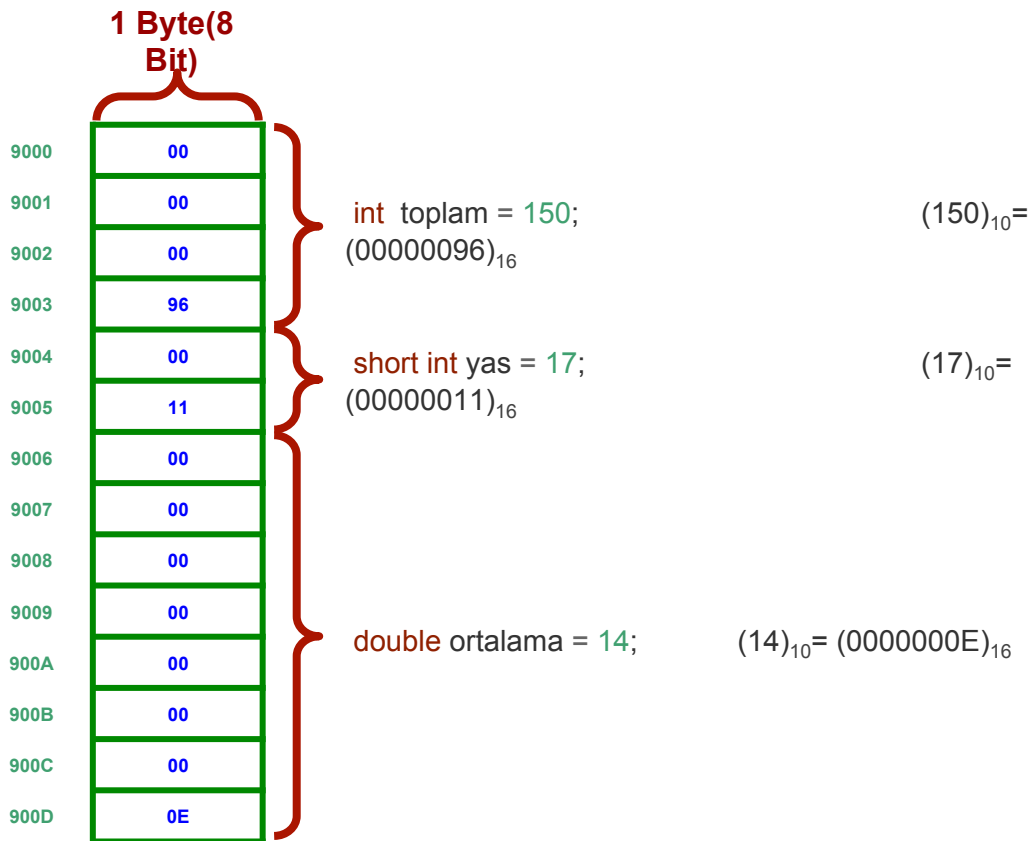
```
    printf("toplam: %d\n", toplam);
```

```
    printf("yas: %d\n", yas);
```

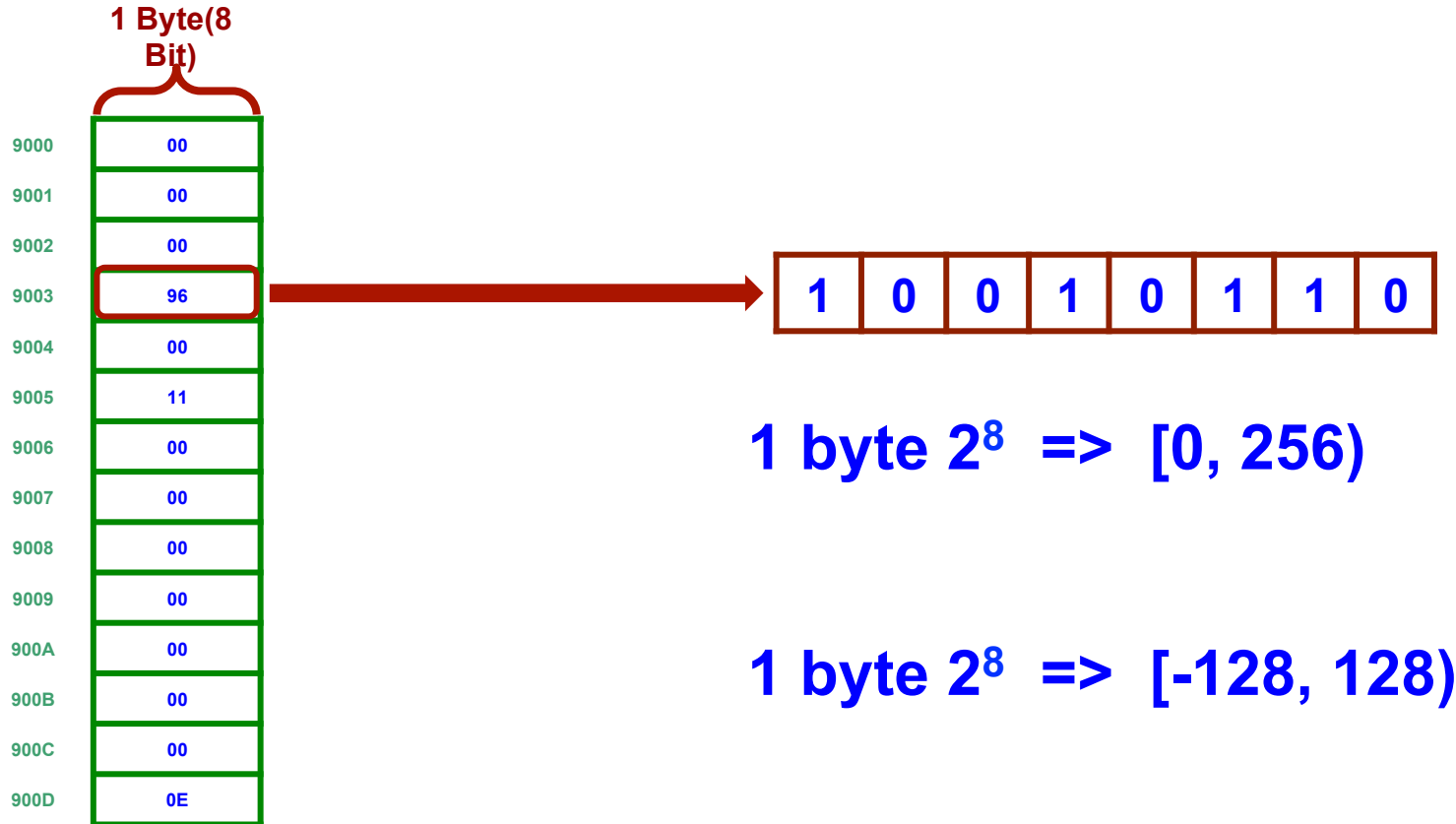
```
    printf("ortalama: %f\n", ortalama);
```

```
    return 0;
```

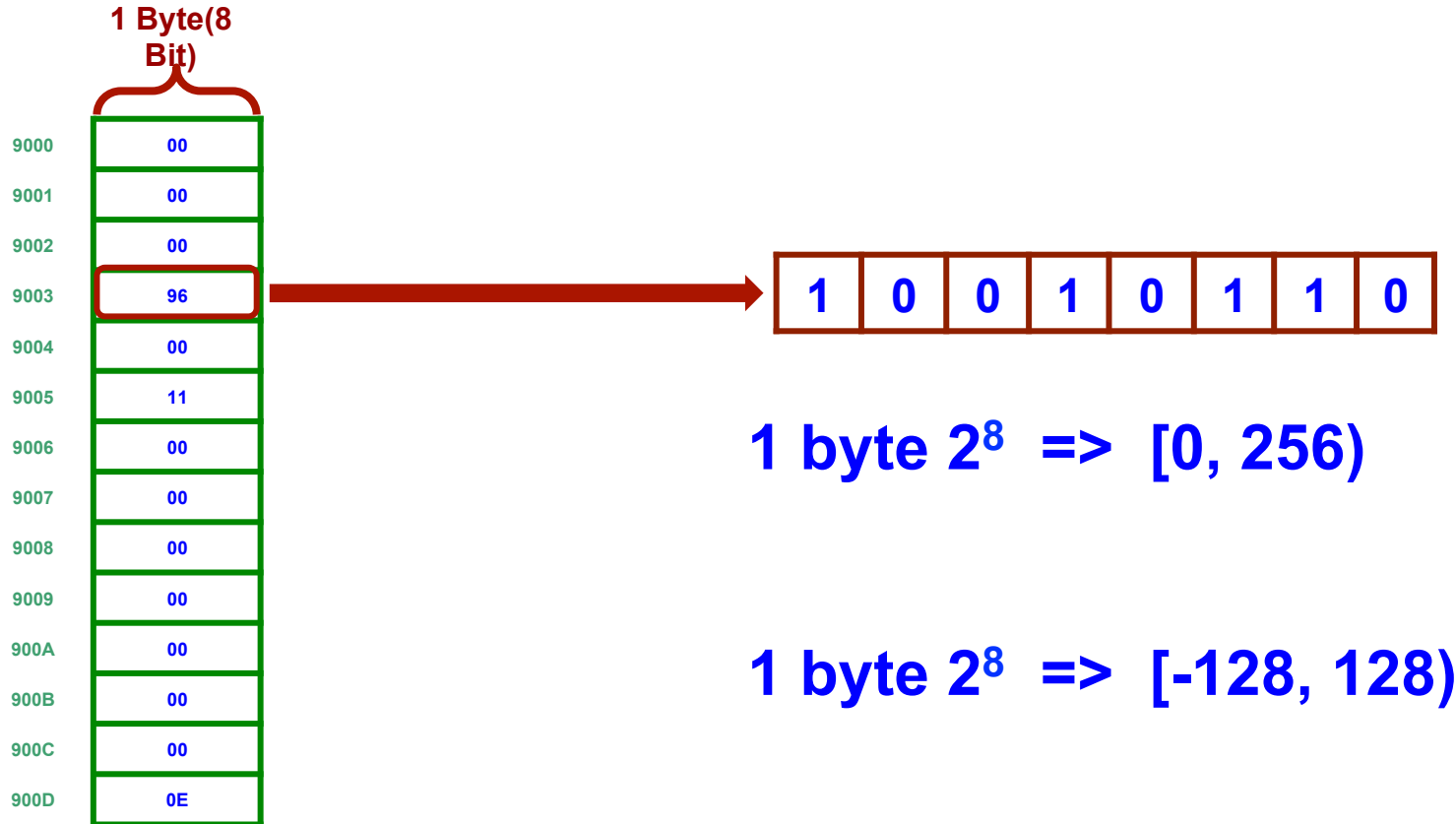
```
}
```



Hafıza Yerlesimi



Hafıza Yerlesimi



Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    char a = 'T';
```

```
    char b;
```

```
    char c = 'S';
```

```
    char d = 'T';
```

```
    printf("a = %d\n",a);
```

```
    printf("c = %d\n",c);
```

```
    printf("d = %d\n",d);
```

```
    return 0;
```

```
}
```

Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    char a = 'T';
```

```
    char b;
```

```
    char c = 'S';
```

```
    char d = 'T';
```

```
    printf("a = %d\n",a);
```

```
    printf("c = %d\n",c);
```

```
    printf("d = %d\n",d);
```

```
    return 0;
```

```
}
```

9000

9001

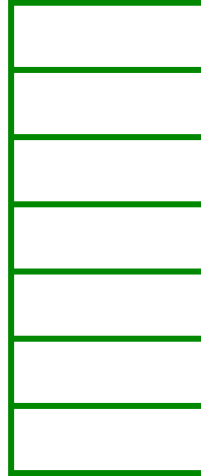
9002

9003

9004

9005

9006



a

b

c

d

Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    char a = 'T';
```

```
    char b;
```

```
    char c = 'S';
```

```
    char d = 'T';
```

```
    printf("a = %d\n",a);
```

```
    printf("c = %d\n",c);
```

```
    printf("d = %d\n",d);
```

```
    return 0;
```

```
}
```

9000		
9001	84	a
9002		b
9003	83	c
9004	84	d
9005		
9006		

Hafıza Yerlesimi

```
#include<stdio.h>
```

```
int main () {
```

```
    char a = 'T';
```

```
    char b;
```

```
    char c = 'S';
```

```
    char d = 'T';
```

```
    b = 'E';
```

```
    printf("a = %d\n",a);
```

```
    printf("c = %d\n",c);
```

```
    printf("d = %d\n",d);
```

```
    return 0;
```

```
}
```

9000

9001

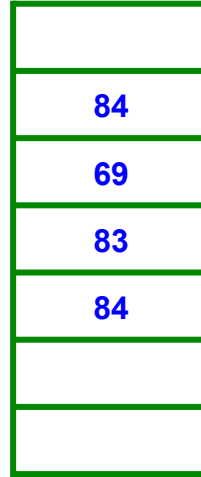
9002

9003

9004

9005

9006



84
69
83
84

a

b

c

d

Adres Operatörü

```
#include<stdio.h>
```

```
int main () {
```

```
    char a = 'T';
```

```
    char b;
```

```
    char c = 'S';
```

```
    char d = 'T';
```

```
    b = 'E';
```

```
    printf("a = %d\n",a);
```

```
        printf("c = %d\n",c);
```

```
        printf("d = %d\n",d);
```

```
    printf("a'nın adresi = %d\n",&a);
```

```
        printf("b'nin adresi = %d\n",&b);
```

```
        printf("c'nin adresi = %d\n",&c);
```

```
        printf("d'nin adresi = %d\n",&d);
```

```
    return 0;
```

```
}
```

9000		
9001	84	a
9002	69	b
9003	83	c
9004	84	d
9005		
9006		

Adres Operatörü

```
#include<stdio.h>
```

```
int main () {
```

```
    char a = 'T';
```

```
    char b;
```

```
    char c = 'S';
```

```
    char d = 'T';
```

```
    b = 'E';
```

```
    printf("a = %d\n",a);
```

```
        printf("c = %d\n",c);
```

```
        printf("d = %d\n",d);
```

```
    printf("a'nın adresi = %d\n",&a);
```

```
        printf("b'nin adresi = %d\n",&b);
```

```
        printf("c'nin adresi = %d\n",&c);
```

```
        printf("d'nin adresi = %d\n",&d);
```

```
    return 0;
```

```
}
```

%d yerine %p



isaretc(pointer)

9000	
9001	a = 84
9002	b = 69
9003	c = 83
9004	d = 84
9005	
9006	

isaretc(pointer)

9000	
9001	a = 84
9002	b = 69
9003	c = 83
9004	d = 84
9005	
9006	p

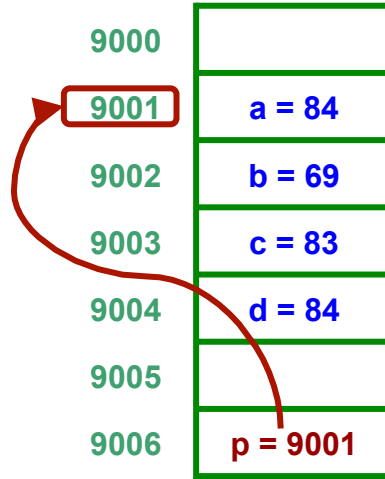
```
int p;  
p = 9001;
```

isaretc(pointer)

9000	
9001	a = 84
9002	b = 69
9003	c = 83
9004	d = 84
9005	
9006	p = 9001

```
int p;  
p = 9001;
```

isaretc(pointer)



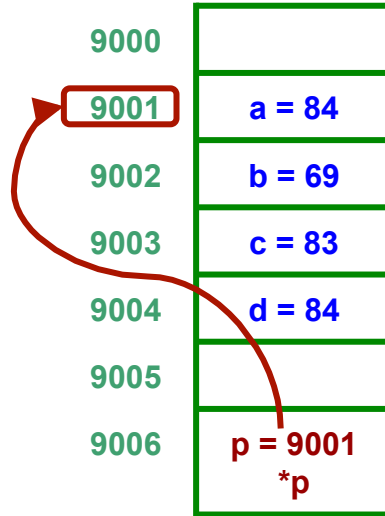
~~int
p = 9001;~~

Adres Saklama

9000	
9001	a = 84
9002	b = 69
9003	c = 83
9004	d = 84
9005	
9006	*p

char * p;

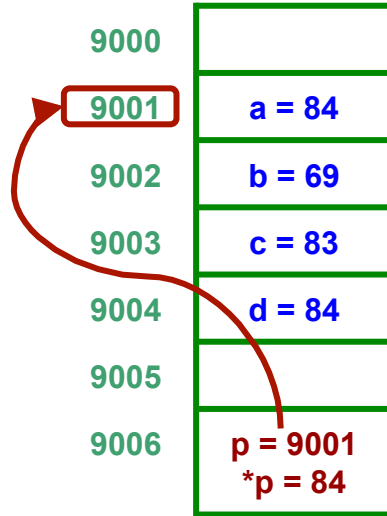
Adres Saklama



```
char * p;
```

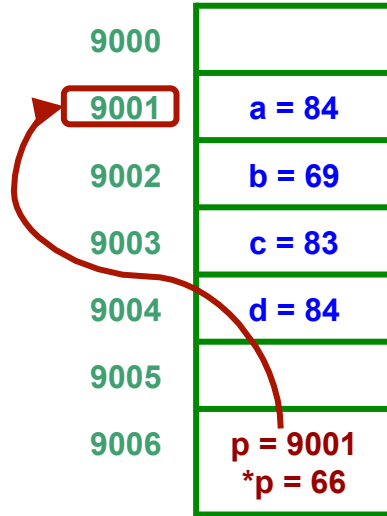
```
p = &a;
```

Adres Saklama



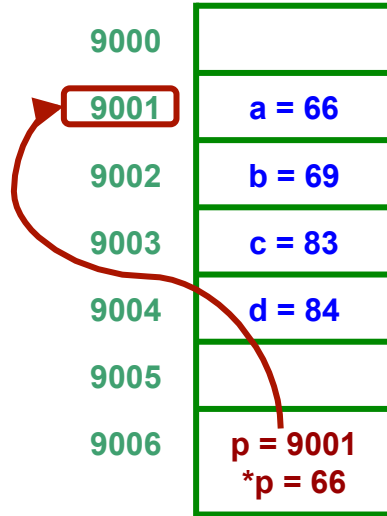
```
char * p;  
p = &a;  
printf("%d\n", *p);
```

Adres Saklama



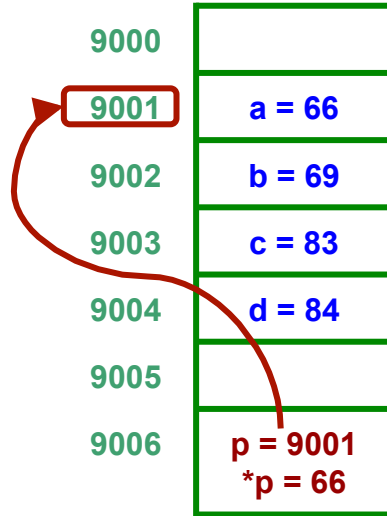
```
char * p;  
p = &a;  
printf("%d\n", *p);  
*p = 66; // 'B'
```

Adres Saklama



```
char * p;  
p = &a;  
printf("%d\n", *p);  
*p = 66; // 'B'
```


Adres Saklama



```
char * p;  
p = &a;  
printf("%d\n", *p);  
*p = 66; // 'B'  
printf("%d\n", a);
```

Pointer Kullanım Alanları

- ❖ fonksiyona parametre olarak gelen degiskenin degerini degistirmek
- ❖ karakter dizileri
- ❖ dinamik (degisken boyutlu) diziler
- ❖ baglı liste, ağaç vb. veriyapıları
- ❖ bellegin istenilen yerine erisim (sistem programlama)



Örnek-1

```
#include <stdio.h>
```

```
char a = 'T';
```

```
char b = 'E';
```

```
char c = 'S';
```

```
char d = 'T';
```

```
int main() {
```

```
    printf("a nin adresi: %d \n", &a);
```

```
    printf("b nin adresi: %d \n", &b);
```

```
    printf("c nin adresi: %d \n", &c);
```

```
    printf("d nin adresi: %d \n", &d);
```

```
    return 0;
```

```
}
```

9000	
9001	a = 84
9002	b = 69
9003	c = 83
9004	d = 84
9005	
9006	

Örnek-1

```
#include <stdio.h>
```

```
char a = 'T';
```

```
char b = 'E';
```

```
char c = 'S';
```

```
char d = 'T';
```

```
int main() {
```

```
    printf("a nin adresi: %d \n", &a);
```

```
    printf("b nin adresi: %d \n", &b);
```

```
    printf("c nin adresi: %d \n", &c);
```

```
    printf("d nin adresi: %d \n", &d);
```

```
    printf("a nin degeri: %d\n", a);
```

```
    char *p;
```

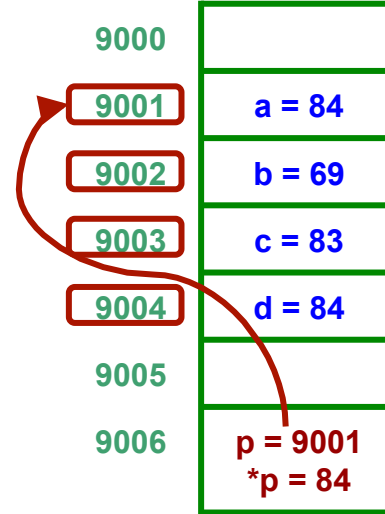
```
    p = &a;
```

```
    printf("p nin degeri : %d\n", p);
```

```
    printf("*p nin degeri: %d\n\n", *p);
```

```
    return 0;
```

```
}
```



Örnek-1

```
#include <stdio.h>
```

```
char a = 'T';
```

```
char b = 'E';
```

```
char c = 'S';
```

```
char d = 'T';
```

```
int main() {
```

```
    printf("a nin adresi: %d \n", &a);
```

```
    printf("b nin adresi: %d \n", &b);
```

```
    printf("c nin adresi: %d \n", &c);
```

```
    printf("d nin adresi: %d \n", &d);
```

```
    printf("a nin degeri: %d\n", a);
```

```
    char *p;
```

```
    p = &a;
```

```
    printf("p nin degeri : %d\n", p);
```

```
    printf("**p nin degeri: %d\n\n", *p);
```

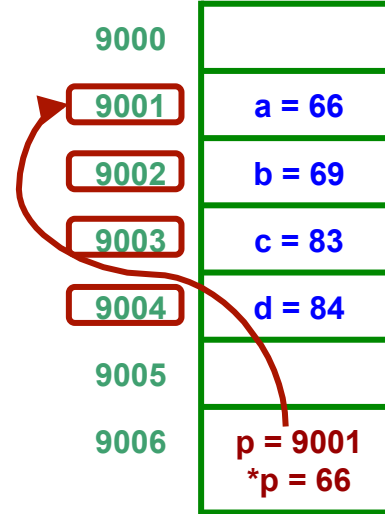
```
    *p = 'B'; // ascii kodu 66
```

```
    printf("a nin degeri: %d\n", a);
```

```
    printf("**p nin degeri: %d\n", *p);
```

```
    return 0;
```

```
}
```



Örnek-2

```
#include <stdio.h>
int main() {
    int a = 5;
    printf("a'nin degeri: %d\n\n", a);
    printf("a'nin adresi: %p\n", &a);
    printf("10'luk tabanda: %u\n\n", &a);

    return 0;
}
```

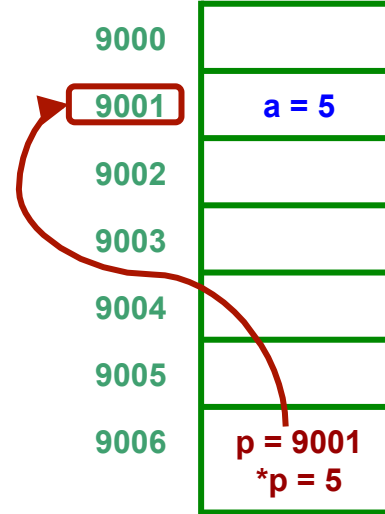
9000	
9001	a = 5
9002	
9003	
9004	
9005	
9006	

Örnek-2

```
#include <stdio.h>
int main() {
    int a = 5;
    printf("a'nin degeri: %d\n\n", a);
    printf("a'nin adresi: %p\n", &a);
    printf("10'luk tabanda: %u\n\n", &a);

    int * p;
    p = &a;
    printf("p : %p\n", p);
    printf("*p : %d\n\n", *p);

    return 0;
}
```



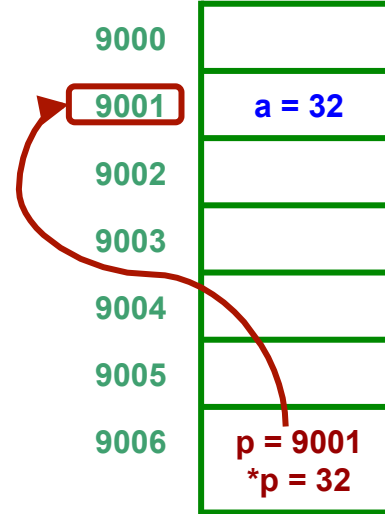
Örnek-2

```
#include <stdio.h>
int main() {
    int a = 5;
    printf("a'nin degeri: %d\n\n", a);
    printf("a'nin adresi: %p\n", &a);
    printf("10'luk tabanda: %u\n\n", &a);

    int * p;
    p = &a;
    printf("p : %p\n", p);
    printf("*p : %d\n\n", *p);

    *p = 32;
    printf("a'nin degeri: %d\n", a);

    return 0;
}
```



Örnek-3

```
#include <stdio.h>
```

```
int main() {  
    int a = 5;  
    printf("a: %d\n", a);  
  
    return 0;  
}
```

9000	main()
9001	a = 5
9002	
9003	
9004	
9005	
9006	
9007	
9008	
9009	

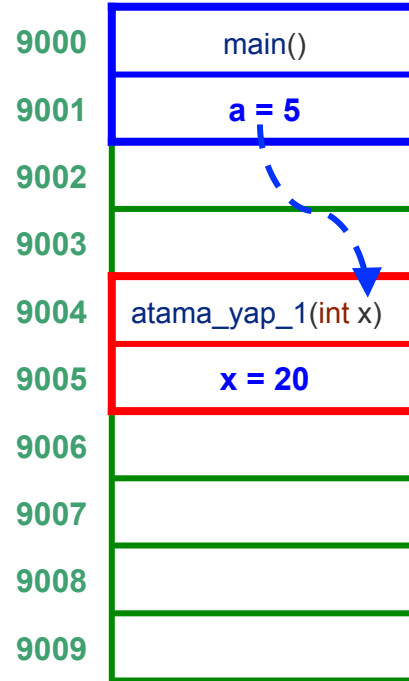
Örnek-3

```
#include <stdio.h>
void atama_yap_1(int x) {
    x = 20;
}

int main() {
    int a = 5;
    printf("a: %d\n", a);

    atama_yap_1(a);
    printf("a: %d\n", a);

    return 0;
}
```



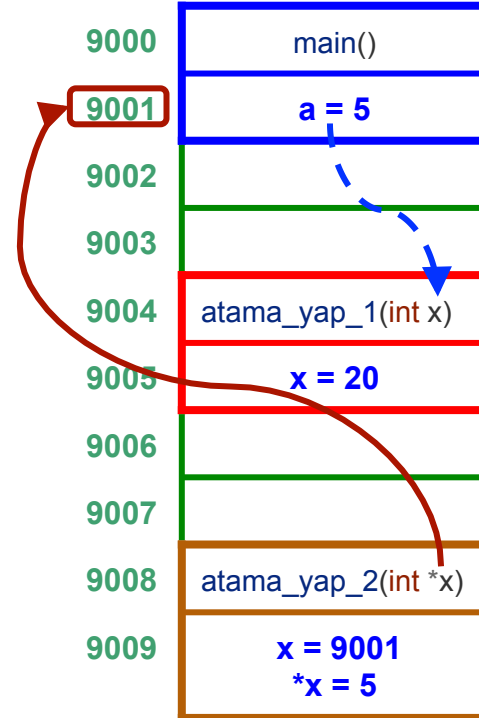
Örnek-3

```
#include <stdio.h>
void atama_yap_1(int x) {
    x = 20;
}
void atama_yap_2(int *x) {
}
int main() {
    int a = 5;
    printf("a: %d\n", a);

    atama_yap_1(a);
    printf("a: %d\n", a);

    atama_yap_2(&a);
    printf("a: %d\n", a);

    return 0;
}
```



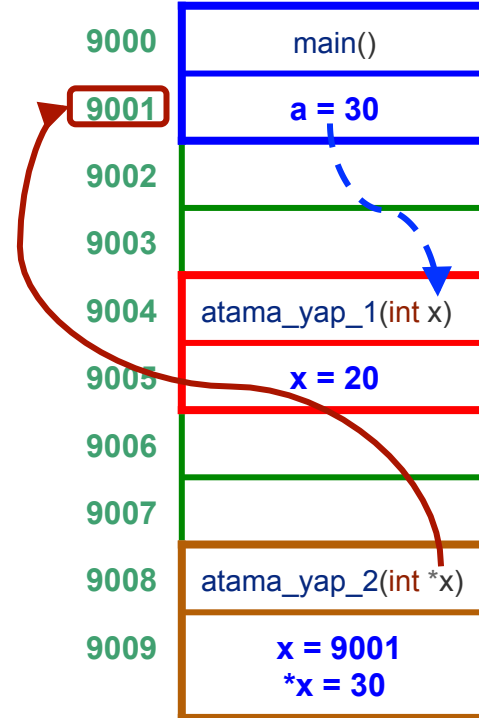
Örnek-3

```
#include <stdio.h>
void atama_yap_1(int x) {
    x = 20;
}
void atama_yap_2(int *x) {
    *x = 30;
}
int main() {
    int a = 5;
    printf("a: %d\n", a);

    atama_yap_1(a);
    printf("a: %d\n", a);

    atama_yap_2(&a);
    printf("a: %d\n", a);

    return 0;
}
```



Örnek-4

```
#include <stdio.h>
```

```
int main() {  
    int a = 1;  
    int b = 2;  
    printf("a: %d - b: %d\n", a, b);
```

```
    return 0;  
}
```

9000

main()

9001

a = 1

9002

b = 2

9003

9004

9005

9006

9007

9008

9009

900A

900B

900C

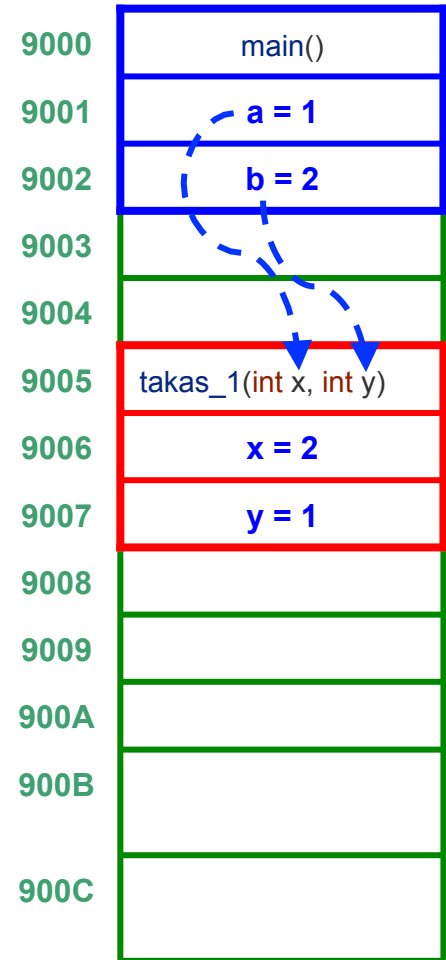
Örnek-4

```
#include <stdio.h>
void takas_1(int x, int y) {
    int tmp = x;
    x = y;
    y = tmp;
}

int main() {
    int a = 1;
    int b = 2;
    printf("a: %d - b: %d\n", a, b);

    takas_1(a, b);
    printf("a: %d - b: %d\n\n", a, b);
    printf("a: %d - b: %d\n", a, b);

    return 0;
}
```



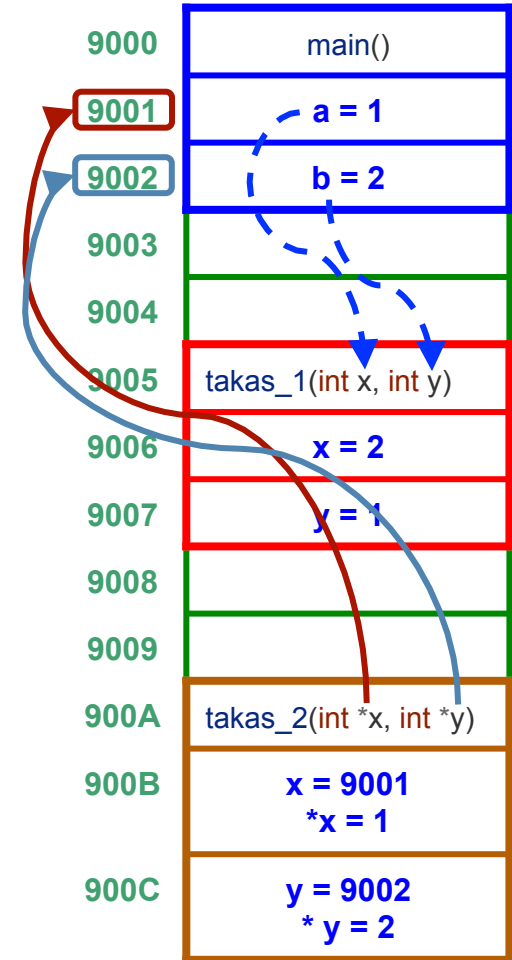
Örnek-4

```
#include <stdio.h>
void takas_1(int x, int y) {
    int tmp = x;
    x = y;
    y = tmp;
}
void takas_2(int *x, int *y) {
    int tmp = *x;
    *x = *y;
    *y = tmp;
}
int main() {
    int a = 1;
    int b = 2;
    printf("a: %d - b: %d\n", a, b);

    takas_1(a, b);
    printf("a: %d - b: %d\n\n", a, b);
    printf("a: %d - b: %d\n", a, b);

    takas_2(&a, &b);
    printf("a: %d - b: %d\n", a, b);

    return 0;
}
```



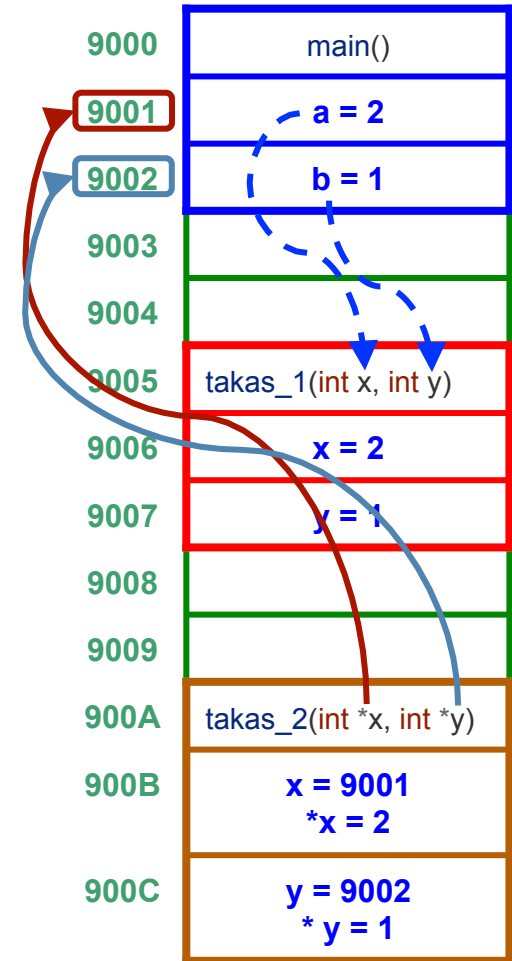
Örnek-4

```
#include <stdio.h>
void takas_1(int x, int y) {
    int tmp = x;
    x = y;
    y = tmp;
}
void takas_2(int *x, int *y) {
    int tmp = *x;
    *x = *y;
    *y = tmp;
}
int main() {
    int a = 1;
    int b = 2;
    printf("a: %d - b: %d\n", a, b);

    takas_1(a, b);
    printf("a: %d - b: %d\n\n", a, b);
    printf("a: %d - b: %d\n", a, b);

    takas_2(&a, &b);
    printf("a: %d - b: %d\n", a, b);

    return 0;
}
```



Örnek-5

```
#include <stdio.h>
```

```
int main() {  
    while (1) {  
        int saat, dakika, saniye;  
        int girilen_sayi;  
  
        printf("sayi girin: ");  
        scanf("%d", &girilen_sayi);  
  
        printf("%d saat %d dakika %d saniye\n", saat, dakika, saniye);  
    }  
    return 0;  
}
```

9000

9001

9002

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9006

9008

9009

900A

main()

saat

dakika

saniye

girilen_sayi

Örnek-5

```
#include <stdio.h>
void saat_cevir(int saniye, int *saat, int *dk, int *sn) {

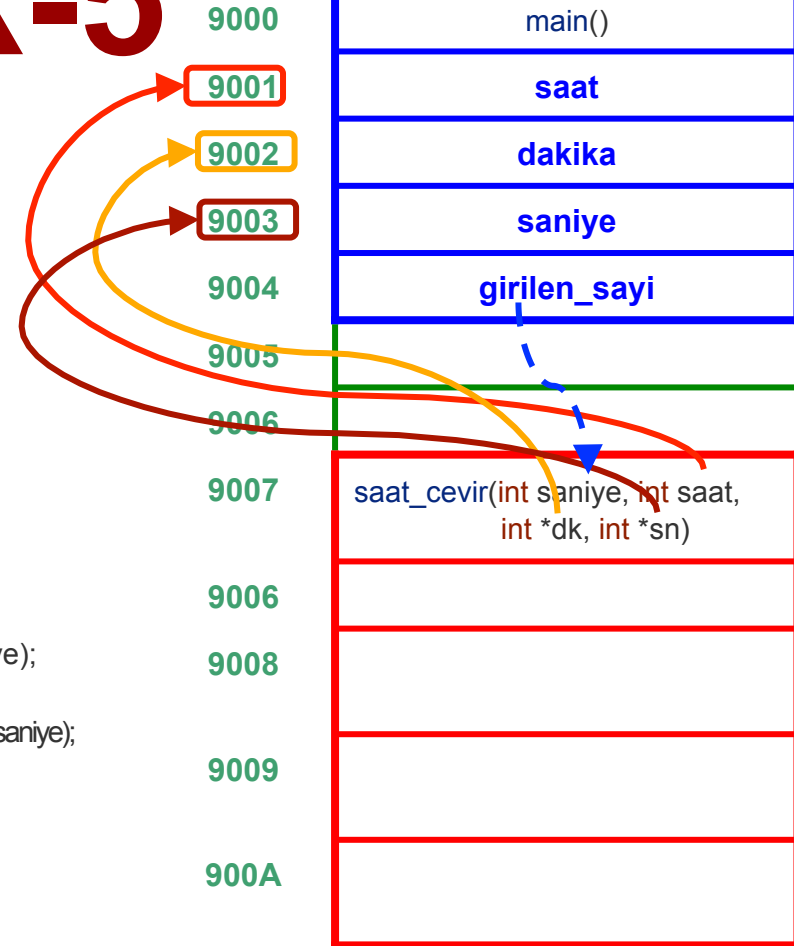
}

int main() {
    while (1) {
        int saat, dakika, saniye;
        int girilen_sayi;

        printf("sayi girin: ");
        scanf("%d", &girilen_sayi);

        saat_cevir(girilen_sayi, &saat, &dakika, &saniye);

        printf("%d saat %d dakika %d saniye\n", saat, dakika, saniye);
    }
    return 0;
}
```



Örnek-5

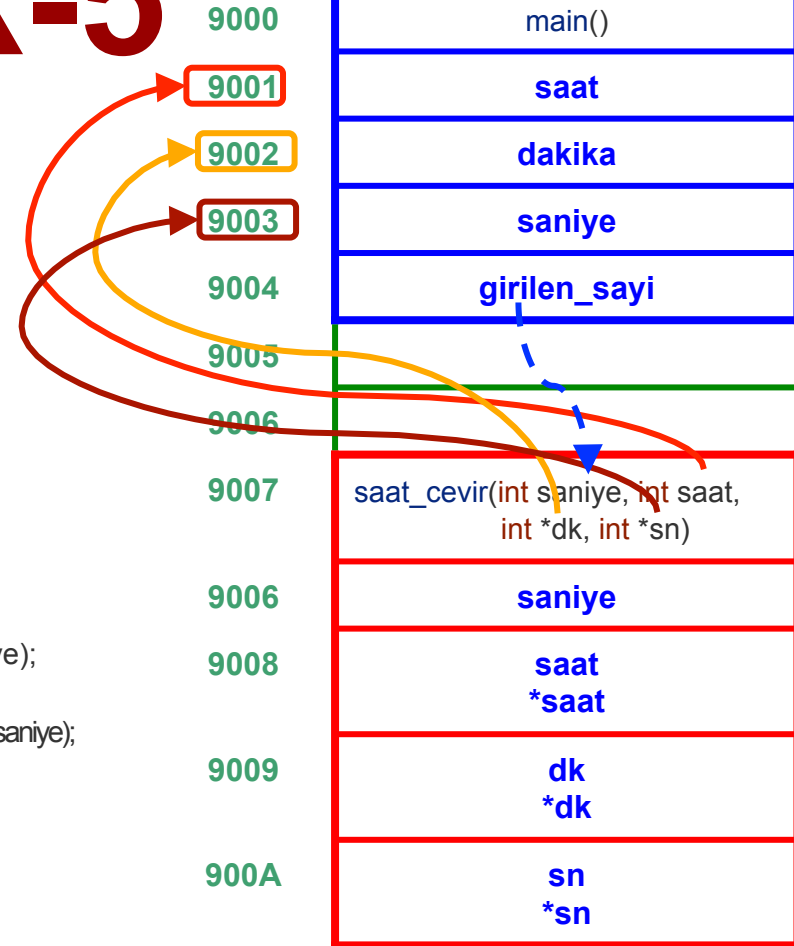
```
#include <stdio.h>
void saat_cevir(int saniye, int *saat, int *dk, int *sn) {
    *sn = saniye % 60;
    *dk = (saniye / 60) % 60;
    *saat = (saniye / 3600);
}

int main() {
    while (1) {
        int saat, dakika, saniye;
        int girilen_sayi;

        printf("sayi girin: ");
        scanf("%d", &girilen_sayi);

        saat_cevir(girilen_sayi, &saat, &dakika, &saniye);

        printf("%d saat %d dakika %d saniye\n", saat, dakika, saniye);
    }
    return 0;
}
```



Sorular

