Typedef

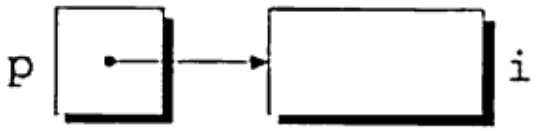
```c
// C program to demonstrate typedef
#include <stdio.h>

// After this line BYTE can be used
// in place of unsifned char
typedef unsigned char BYTE;

int main()
{
    BYTE b1, b2;
    b1 = 'c';
    printf("%c ", b1);
    return 0;
}
```


Type casting

```c
// C program to demonstrate explicit type casting
#include<stdio.h>

int main()
{
    double x = 1.2;

    // Explicit conversion from double to int
    int sum = (int)x + 1;

    printf("sum = %d", sum);

    return 0;
}
```

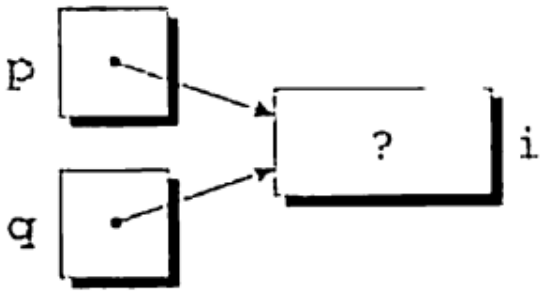
İşaretçiler - Pointers

```
int *p;        p = &i;
```



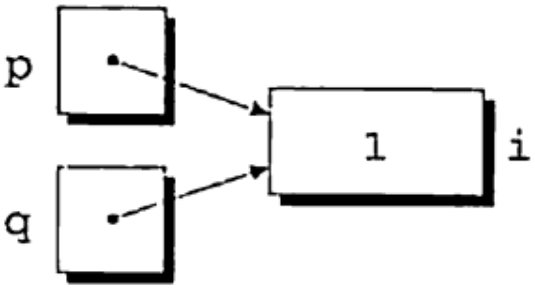

```
printf("%d\n", *p);
```

```
int i, j, *p, *q;

p = &i;

q = p;
```

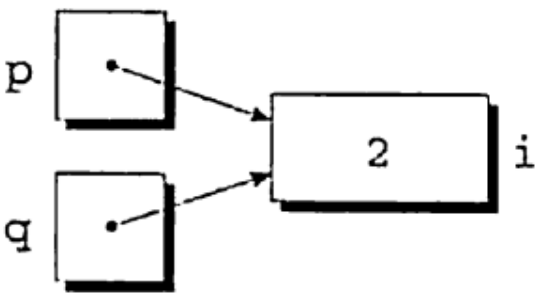


İşaretçiler - Pointers

```
*p = 1;
```




```
*q = 2;
```



İşaretçiler - Pointers

```
void decompose(double x, long *int_part, double *frac_part)
{
  *int_part = (long) x;
  *frac_part = x - *int_part;
}
```

```
decompose(3.14159, &i, &d);
```

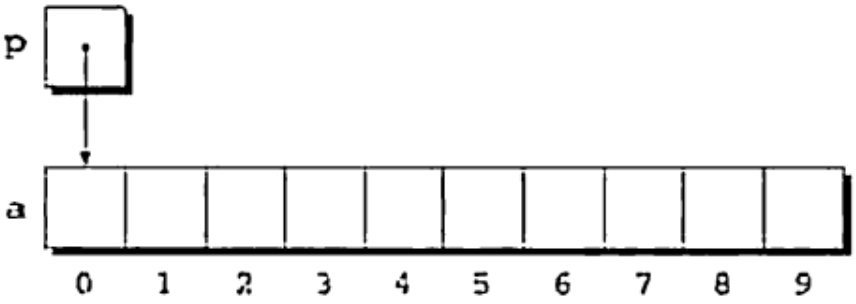

İşaretçiler - Pointers

```
int *max(int *a, int *b)
{
  if (*a > *b)
    return a;
  else
    return b;
}
```

```
int *p, i, j;
...
p = max(&i, &j);
```

İşaretçiler Diziler

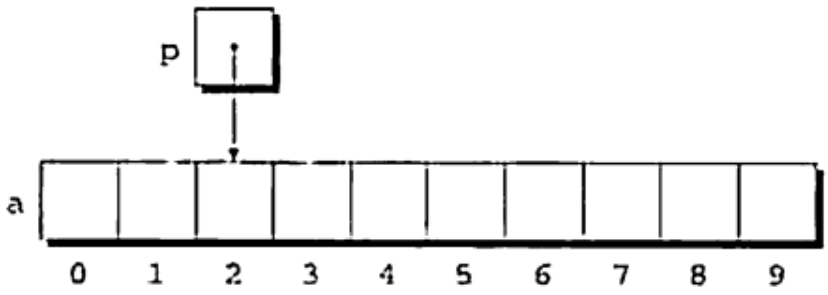
```
int a[10], *p;

p = &a[0];
```



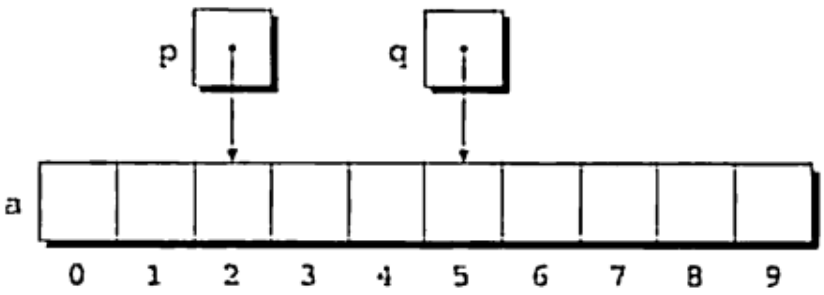

```
*p = 5;
```

İşaretçiler Diziler

```
p = &a[2];
```

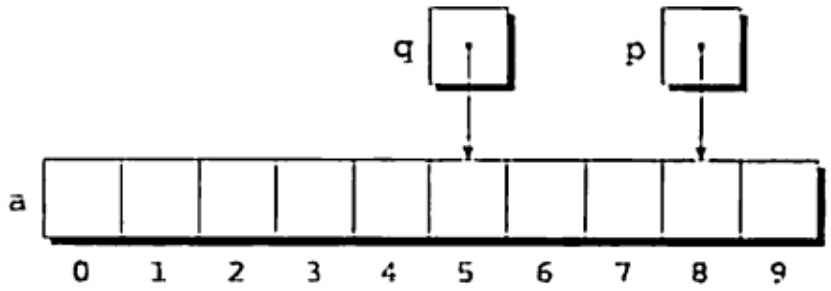



```
q = p + 3;
```

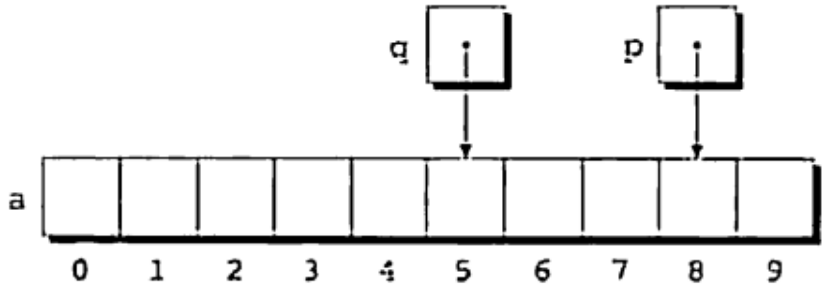


İşaretçiler Diziler

```
p += 6;
```

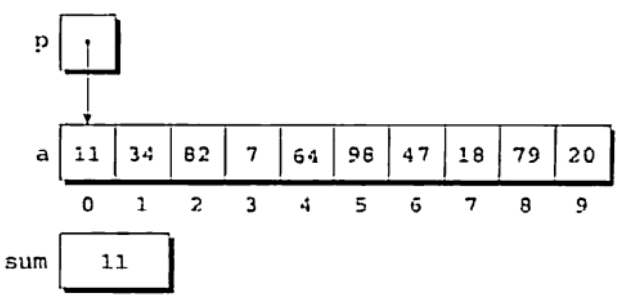


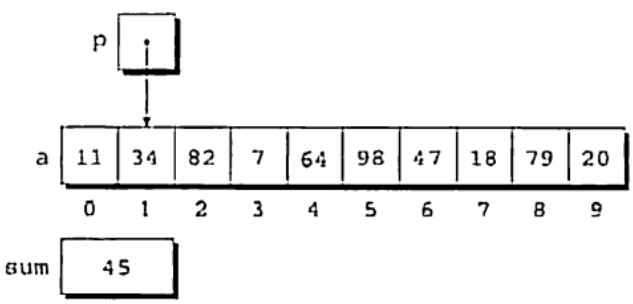

```
q = p - 3;
```



İşaretçiler Diziler

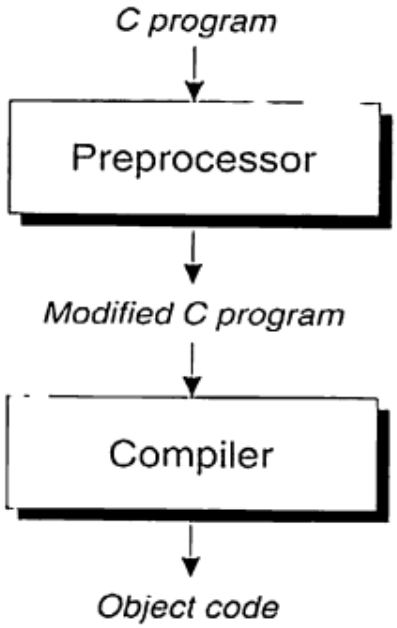
```
#define N 10
...
int a[N], sum, *p;
...
sum = 0;
for (p = &a[0]; p < &a[N]; p++)
  sum += *p;
```






```
for (p = a; p < a + N; p++)
  sum += *p;
```

Prepocessors




```
#define STR_LEN 80
#define TRUE    1
#define FALSE   0
#define PI      3.14159

#define BEGIN {
#define END   }

#define LOOP for (;;)
```


Prepocessors

```
#define BOOL int
#define TRUE 1
#define FALSE 0
```

boolean.h

```
#include "boolean.h"
```

```
#include "boolean.h"
```

Prepocessors

```
void make_empty(void);
int is_empty(void);
int is_full(void);
void push(int i);
int pop(void);
```

stack.h

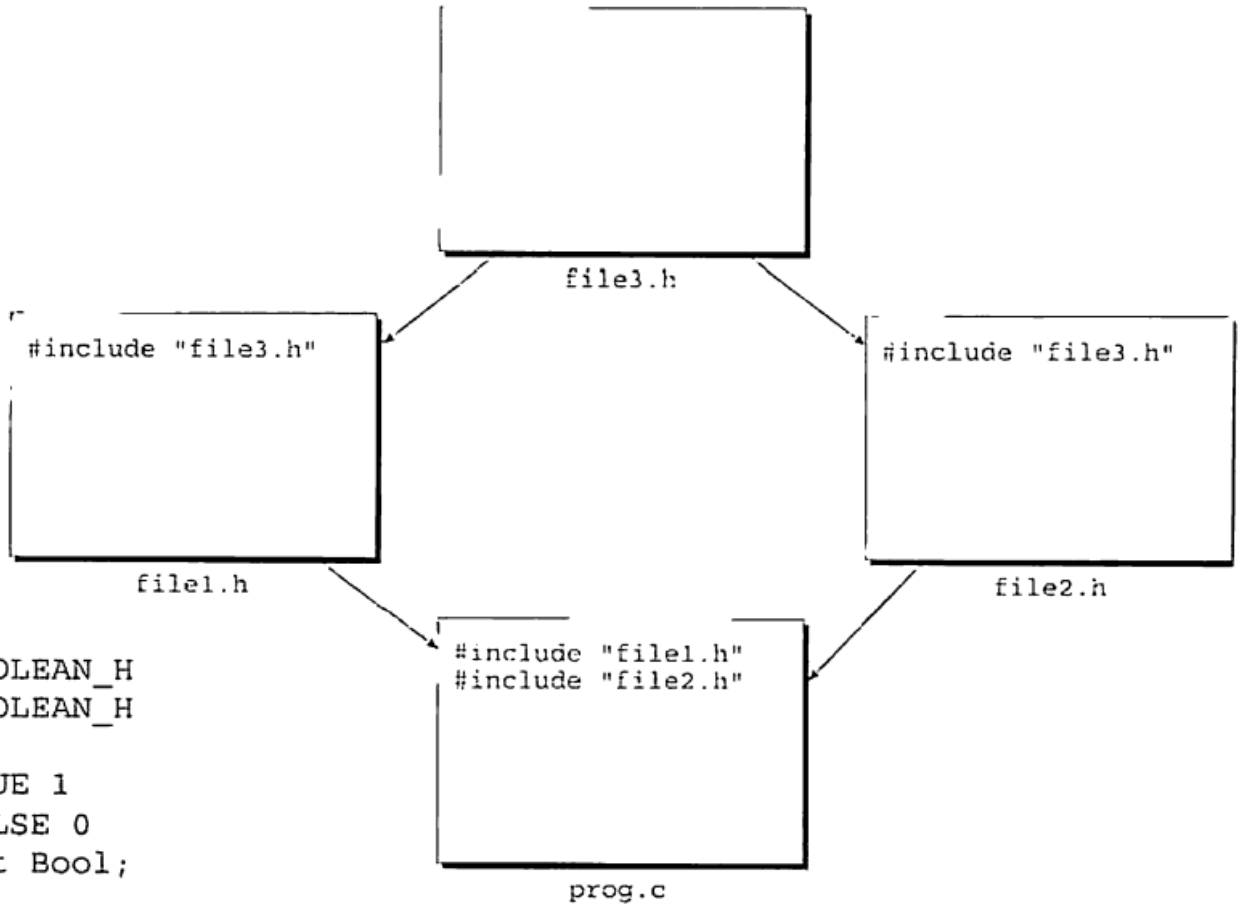
```
#include "stack.h"

int main(void)
{
  make_empty();
  …
}
```

calc.c

```
#include "stack.h"

int contents[100];
int top = 0;

void make_empty(void)
{ … }

int is_empty(void)
{ … }

int is_full(void)
{ … }

void push(int i)
{ … }

int pop(void)
{ … }
```

stack.c

Prepocessors



Örnek:

```
#ifndef BOOLEAN_H
#define BOOLEAN_H

#define TRUE 1
#define FALSE 0
typedef int Bool;

#endif
```

Structures

```
struct {
  int number;
  char name[NAME_LEN+1];
  int on_hand;
} part1, part2;
```

```
struct {
  int number;
  char name[NAME_LEN+1];
  int on_hand;
} part1 = {528, "Disk drive", 10},
  part2 = {914, "Printer cable", 5};
```


Structures

```
struct {
  int number;
  char name[NAME_LEN+1];
  int on_hand;
} part1 = {528, "Disk drive", 10},
  part2 = {914, "Printer cable", 5};
```

```
printf("Part number: %d\n", part1.number);
printf("Part name: %s\n", part1.name);
printf("Quantity on hand: %d\n", part1.on_hand);
```

Structures

```
struct part {
  int number;
  char name[NAME_LEN+1];
  int on_hand;
};

struct part part1, part2;


part part1, part2;    /*** WRONG ***/
```


Structures

```
typedef struct {
  int number;
  char name[NAME_LEN+1];
  int on_hand;
} Part;

Part part1, part2;
```

Structures

```
void print_part(struct part p)
{
  printf("Part number: %d\n", p.number);
  printf("Part name: %s\n", p.name);
  printf("Quantity on hand: %d\n", p.on_hand);
}
```

```
print_part(part1);
```


Enumerations

```
enum week{Mon, Tue, Wed, Thur, Fri, Sat, Sun};

int main()
{
    enum week day;
    day = Wed;
    printf("%d",day);
    return 0;
}
```

Output:

```
2
```

Enumerations

```c
#include <stdio.h>
enum day {sunday = 1, monday, tuesday = 5,
          wednesday, thursday = 10, friday, saturday};

int main()
{
    printf("%d %d %d %d %d %d %d", sunday, monday, tuesday,
           wednesday, thursday, friday, saturday);
    return 0;
}
```

Output:

```
1 2 5 6 10 11 12
```


Enumerations

```c
#include <stdio.h>
enum day {sunday = 1, tuesday, wednesday, thursday, friday, saturday};

int main()
{
    enum day d = thursday;
    printf("The day number stored in d is %d", d);
    return 0;
}
```

```
The day number stored in d is 4
```

Pointers of Structs

```
struct node {
  int value;
  struct node *next;
};

struct node *new_node;

new_node = malloc(sizeof(struct node));

(*new_node).value = 10;

new_node->value = 10;
```