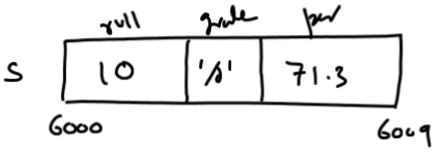
STRUCTURE (User Defined Data Type)

Syntax :

```
struct   <struct_name>
{
      <data type> <var>;
      <data type> <var>;
        :
 };
```

```
struct Student
{
     int roll ;
     char grade;
     float per ;
};
int main ( )
{
   struct Student S;
      S.roll=10;
      S.grade='A';
```



```
S.per = 71.3;

printf("%d %c %f", S.roll,
                   S.grade,
                   S.per);
return 0;
}
```

TERMINOLOGIES IN STRUCTURE

keyword

```
struct Student
{
        int roll;
        char grade;
        float per;
};
int main( )
{
    struct Student S;
}
```

Name or Tag

decl or template

member or ele

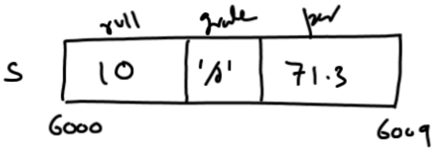
variable

data type

```
struct Student
{
        int roll;

        char grade;

        float per;
};
typedef struct Student Student;
int main( )
{
        Student S;
    S.roll=10;
    S.grade='A';
```



```
S.per = 71.3;

printf("%d %c %f", S.roll,
                   S.grade,
                   S.per);

return 0;
}
```

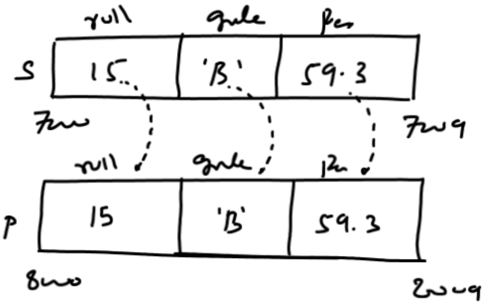
```
typedef struct Student
        {
              int roll ;

              char grade;
              float per ;
        } Student ;
```

ACCEPTING INPUT IN STRUCTURE FROM THE USER

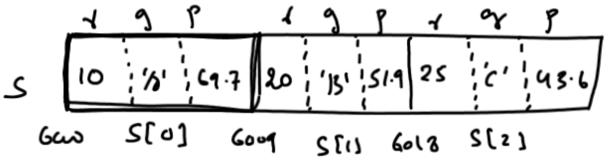
```
struct Student
{
   int roll;
   char grade;
   float per;
};
int main()
{
  struct Student S;
  printf("Enter roll,grade and per:");
  scanf("%d %c %f",&S.roll,&S.grade,&S.per);
  printf("Roll=%d,Grade=%c,Per=%f",S.roll,S.grade,S.per);
  return 0;
}
```

COPYING ONE STRUCTURE VAR TO ANOTHER



```
struct Student
{
   int roll;
   char grade;
   float per;
};
int main()
{
  struct Student S,P;
  printf("Enter roll,grade and per:");
  scanf("%d %c %f",&S.roll,&S.grade,&S.per);
  P.roll=S.roll;
  P.grade=S.grade;   OR    P = S;
  P.per=S.per;
  printf("Roll=%d,Grade=%c,Per=%f",P.roll,P.grade,P.per);
  return 0;
}
```

CREATING ARRAY OF STRUCTURES



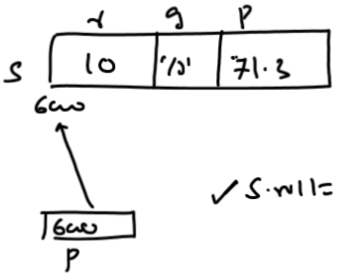
```
struct Student
{
   int roll;
   char grade;
   float per;
};
int main()
{
  struct Student S[3];
  int i;
  for(i=0;i<3;i++)
  {
    printf("Enter roll,grade and per:");
    scanf("%d %c %f",&S[i].roll,&S[i].grade,&S[i].per);
  }
  for(i=0;i<3;i++)
     printf("\nRoll=%d,Grade=%c,Per=%f",S[i].roll,S[i].grade,S[i].per);
 return 0;
}
```

③ &

① [ ]

② .

STRUCTURE AND POINTER



```
struct Student
{
   int roll;
   char grade;
   float per;
};
int main()
{
  struct Student S,*P;
  P=&S;
  P->roll=10;
  P->grade='A';
  P->per=71.3;
  printf("Roll=%d,Grade=%c,Per=%f",P->roll,P->grade,P->per);
  return 0;
}
```

✓ S.roll=10;

P.roll=10; ✗

① ✓ (*P).roll=10;

OR

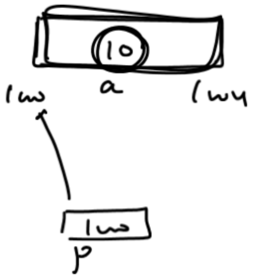
② P→roll=10; ✓

int a=10;

int *p;

p=&a;

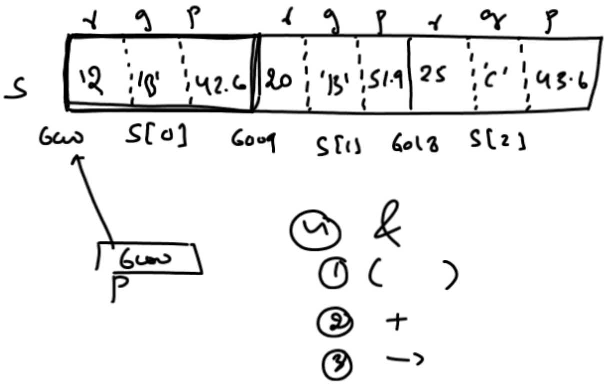
*p=a.



ACCEPTING INPUT IN STRUCTURE FROM THE USER USING POINTER

```
struct Student
{
   int roll;
   char grade;
   float per;
};
int main()
{
  struct Student S,*P;
  P=&S;
  printf("Enter roll,grade and per:");
  scanf("%d %c %f", &P->roll,&P->grade,&P->per);
  printf("Roll=%d,Grade=%c,Per=%f",P->roll,P->grade,P->per);
  return 0;
}
```

CREATING ARRAY OF STRUCTURES



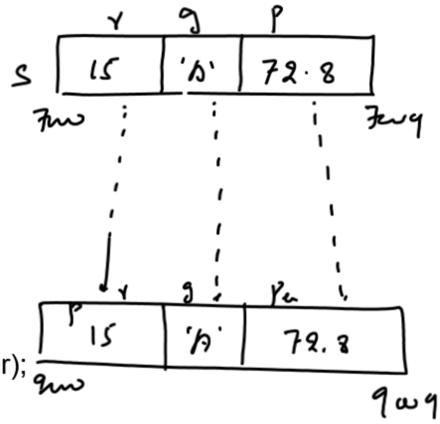
r g p r g p r g p
S
12 'B' 42.6 20 'B' 51.9 25 'C' 43.6
6000 S[0] 6009 S[1] 6018 S[2]
6000
P
④ &
① ( )
② +
③ ->

```
struct Student
{
   int roll;
   char grade;
   float per;
};
int main()
{
  struct Student S[3],*P;
  int i;
  P=S;
  for(i=0;i<3;i++)
  {
    printf("Enter roll,grade and per:");
    scanf("%d %c %f",&(P+i)->roll,&(P+i)->grade,&(P+i)->per);
  }
  for(i=0;i<3;i++)
     printf("\nRoll=%d,Grade=%c,Per=%f",(P+i)->roll,(P+i)->grade,(P+i)->per);
 return 0;
```

STRUCTURE AND FUNCTIONS

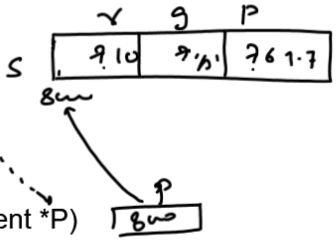
==========================

```
struct Student
{
   int roll;
   char grade;
   float per;
};
void display(struct Student);
int main()
{
  struct Student S;
  printf("Enter roll,grade and per:");
  scanf("%d %c %f",&S.roll,&S.grade,&S.per);
  display(S);
  return 0;
}
void display(struct Student P)
 {
    printf("Roll=%d,Grade=%c,Per=%f",P.roll,P.grade,P.per);
 }
```



```
struct Student
{
   int roll;
   char grade;
   float per;
};
void display(struct Student);
void accept(struct Student *);
int main()
{
  struct Student S;
  accept(&S);
  display(S);
  return 0;
}
void accept(struct Student *P)
{
   printf("Enter roll,grade and per:");
  scanf("%d %c %f",&P->roll,&P->grade,&P->per);
}
```

```
void display(struct Student P)
 {
    printf("Roll=%d,Grade=%c,Per=%f",P.roll,P.grade,P.per);
 }
```


r
g
p
S
?10
?'A'
?61.7
8000
P
8000