CS & IT ENGINEERING

Programming in C

Structures and Unions

DPP 01 Discussion Notes

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01 Question

02 Discussion

Q.1

[NAT]

```
#include <stdio.h>
union u{
    int a;
    char b;
    double d[2];
};
int main( )
{
    union u u1;
    printf("%d",(int)sizeof(u1));
    return 0;
}
```

2
1
2×4 = 8

max(2, 1, 8) = 8

variable

2 1 4

Assume that objects of the type int, char and double occupy 2 bytes, 1 bytes and 4 bytes, respectively.

The memory requirement for variable u1 is 8 (in bytes).

Q.2

[NAT]

Consider the following C declaration:

```
struct ___
{
(1) long a[3];
(2) union
  {
    int y;
    float z;
  }u;
}s;
```


```
struct {
1] member ⇒ 3×8=24
2] 4 bytes
```

Assume that objects of the type int, float and long occupy 2 bytes, 4 bytes and 8 bytes, respectively.

The memory requirement for variable s is 28 (in bytes).

Q.3

[MCQ]

```
#include <stdio.h>
struct s{
  char a, b;
};
void f(struct s *p){
   p->a+=2;
   p->b-=1;
}
int main( )
{
   struct s s1, s2, *q;
   s1.a='A'; s1.b='C';
   q=&s1;
   f(q);
   printf("%c\t%c",s1.a, s1.b);
   return 0;
}
```

The output is:

A. C B

B. A C

C. Compilation error

D. Garbage values

65+2

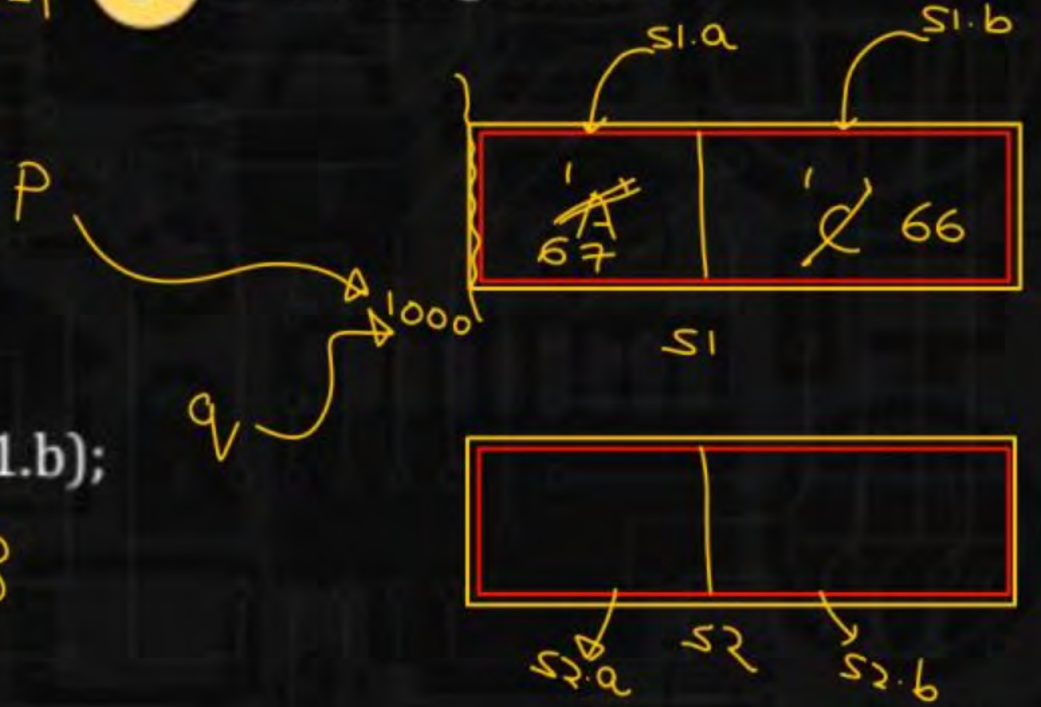
'A'+2

P→a = P→a+2

P→b = P→b-1

C B

A - 65
B - 66
C 67



Q.4

[MCQ]

```
#include <stdio.h>
struct s{
   char a, b;
};
void f(struct s s1){
   s1.a+=3;
   s1.b-=1;
}
int main()
{
   struct s s1;
   s1.a='A'; s1.b='C';
   f(s1);
   printf("%c\t%c",s1.a, s1.b);
   return 0;
}
```

The output is:

A. C B

B. A C

C. Compilation error

D. Garbage values

Q.5

```
#include <stdio.h>
    struct s{
      char a, b;
    };
    void f(struct s s1){
      s1.a+=32;
      s1.b+=32;
    }
    void g(struct s *p){
      static count=2;
      p->a+=count++;
      p->b+=++count;
    }int main(){
      struct s s1, s2;
      s1.a='A'; s1.b='C';
      s2.a='B'; s2.b='D';
      f(s1);
      for(int i=0;i<2;i++)g(&s2);
      printf("%c\t%c",s1.a, s1.b);
      printf("\t%c\t%c",s2.a, s2.b);
      return 0;
    }
```

The output is:

[MCQ]

A. acBD

B. ACBD

C. ACHN

D. acBN

(C)

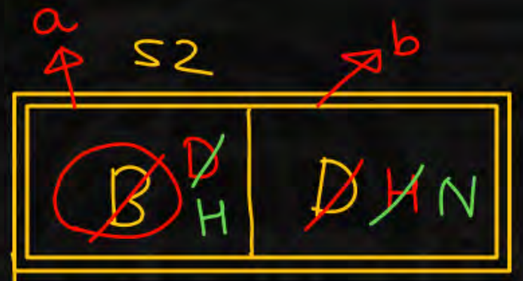
X

(i) P→a = P→a + count;
count = count+1

(ii) count = count+1
P→b = P→b + count

P→a = P→a + 2
P→a = 'B' + 2

P→b = P→b + 4
P→b = D + 4



call by value

1) g(&s2) ⇒ g(2000)
2) g(&s2) ⇒ g(2000)

P
P
P

P→a

count: 2 3 4 5 6

P→a = D + 4
P→b = H + 6

A C H N

Q.6

```
#include <stdio.h>
struct days{
    char *q;
}s[ ]={"Sunday", "Monday",
    "Tuesday", "Wednesday",
   "Thursday", "Friday", "Saturday"};
int main()
{
    struct days *p=s;
    p=p+3;
    printf("%c", *p++->q);
    printf("%c", *++p->q);
    p=p-2;
    printf("%s",p->q);
    return 0;
}
```

The output string printed is-

[MCQ]

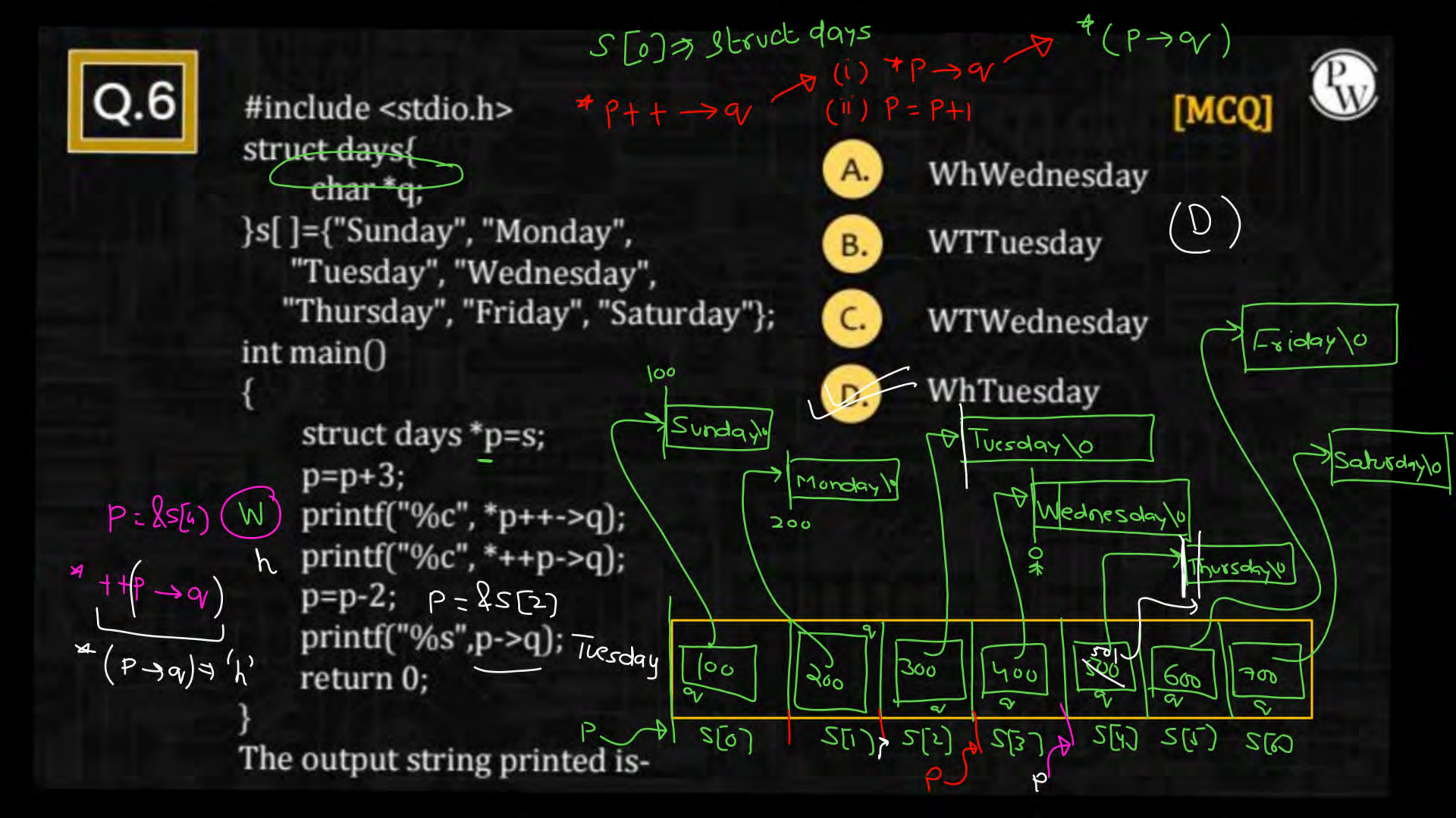
A. WhWednesday

B. WTTuesday

C. WTWednesday

D. WhTuesday

(D)



$$\star\left(\underbrace{++}(p \to q)\right)$$

(i) $\quad p \to q = (p \to q) + 1$

(ii) $\quad \star\,(p \to q)$

Q.7

Which of the following statements are INCORRECT? [MCQ]

B, C, D

A. Functions cannot be defined inside the structure.

B. Structure variable of the same structure type can be defined inside a structure.

C. A function may not contain a structure defined in it.

D. Existing structure cannot be contained in another structure.

Q.8

[NAT]

```
#include<stdio.h>
#include<string.h>
struct t
{
  char sname[20];
};
int main ( )
{
        struct t t1, t2;
        strcpy(t1.sname, "GATEWallah"); //line a
        t2.sname="GATE2023"; //line b
        printf("%s", t1.sname); //line c
        printf("%s", t2.sname); //line d
        return 0;
}
```

Name of an array

Error

Error

The number of lines with error among lines a,b,c,d are 2.


THANK YOU GW
SOLDIERS !