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1 Programming and DS: Programming (15)

1.1 Functions (1) top

1.1.1 Functions: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 8 top

Consider a function is_greater() given below. Mark all option(s) which return 1.

```
int is_greater(unsigned int x, unsigned int y)
{
   if(x-y > 0)
      return 1;
   else
      return 0;
}
```

A. is_greater$(1,2)$
B. is_greater$(-1,-2)$
C. is_greater$(-2,-1)$
D. is_greater$(-1,0)$

goclasses2024_wq15 goclasses programming programming-in-c functions multiple-selects 1-mark

Answer key

1.2 Loop (1) top

1.2.1 Loop: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 13 top

The statement

```
while ( --counter >= 1 )
counter % 2 ? printf("A") : printf("B");
```

can NOT be rewritten as

A.

```
while ( --counter >= 1 )
   if ( counter % 2 )
      printf("A");
   else
      printf("B");
```

B.

```
while ( counter >= 1 )
   if (counter % 2)
      printf("A");
   else
      printf("B");
--counter;
```

C.

```
while ( counter > 1 )
{
   --counter;
   if ( counter % 2 )
      printf("A");
   else
      printf("B");
}
```

D.

```
do
{
   --counter;
   printf( counter % 2 ? "A" : "B" );
} while ( counter >= 2 );
```

goclasses2024_wq15 goclasses programming programming-in-c loop multiple-selects 2-marks

Answer key

1.3 Programming In C (9) top

1.3.1 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 1 top

Which of the following(s) will evaluate to true

A. $0 \&\& 0 == 0$
B. $0 \&\& 1 == 0$
C. $1 \,||\, 0 == 0$
D. $1 \,||\, 1 == 0$

goclasses2024_wq15 goclasses programming programming-in-c multiple-selects 1-mark

Answer key

1.3.2 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 11 top

Let the variables $x, y,$ and $z,$ be of type int and assigned some values. The variable $b1$ is initialized as follows:

```
int b1 = (x > z) && (y >= z);
```

Variables b2, b3, b4, and b5 are initialized below.

```
int b2 = (x <= z) || (y < z)
int b3 = !((x < z) || (y <= z))
int b4 = !((x < z) && (y >= z))
int b5 = ((x > z) && (y > z)) || ((x > z) && (y == z))
```

Variables $b2, b3, b4,$ and $b5$ ALWAYS, SOMETIMES, or NEVER takes the same value as $b1$.
Which of the variable(s) SOMETIMES takes the same value as $b1$?

A. $b2$
B. $b3$
C. $b4$
D. $b5$

goclasses2024_wq15 goclasses programming programming-in-c multiple-selects 2-marks

Answer key

1.3.3 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 15 top

Professor Greg wants to give assignments to his students to write a C program for the $\mathrm{XOR5}$ function. $\mathrm{XOR5}$ is a function that returns true if and only if $\mathrm{EXACTLY}$ one of the integers A and B is 5.
Using which of the following condition(s), $\mathrm{XOR5}$ can be implemented?

A. $(A == 5)! = (B == 5)$
B. $!(A == 5)! = !(B == 5)$
C. $(A == 5)?!(B == 5) : (B == 5)$
D. $((A == 5)||(B == 5)) \&\& !((A == 5) \&\& (B == 5))$

goclasses2024_wq15 goclasses programming programming-in-c multiple-selects 2-marks

Answer key

1.3.4 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 2 top

What will be the output printed by the following program?

```
#include <stdio.h>
int main()
{
   int i = 1;
   for(i = 0; i<10; i+3)
   switch(i)
   {
      case 3:
         printf("Hi. This is case 3");
         break;
      case 6:
         printf("Hi. This is case 6");
         break;
         break;
      default:
         printf("Hi. This is default");
         break;
   }
   return 0;
}
```

A. Hi. This is case 3
B. Hi. This is case 6
C. Infinite Execution
D. Hi. This is default

goclasses2024_wq15 goclasses programming programming-in-c 1-mark

Answer key

1.3.5 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 3 top

What will be the value printed by the following program?

```
int i = 10;
i = !i > 14;
printf("%d", i);
```

A. 10 B. 14 C. 0 D. 1

goclasses2024_wq15 goclasses programming programming-in-c 1-mark

Answer key

1.3.6 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 4 top

What will be the output?

```
int a = 4, b =15, c =29;
if(c>b>a)
   printf("TRUE");
else
   printf("FALSE");
```

A. TRUE B. FALSE C. Syntax Error D. Compilation Error

goclasses2024_wq15 goclasses programming programming-in-c 1-mark

Answer key

1.3.7 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 5 top

If $x, y, z,$ and w are declared as integer variables, which of the following expressions are NOT valid in C?

A. $x+5=y+z$ B. $x=y=z+w$
C. $x=(z-y)==w$ D. $w=x!=y \;\&\&\; z$

goclasses2024_wq15 goclasses programming programming-in-c 1-mark

Answer key

1.3.8 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 6 top

What will be the output of the following C program?.
Here ? : is a ternary operator which is right to left-associative.

```
#include <stdio.h>
int main() {
   int i =2, j =1;
   if (--j ? ++j? i : i++ : i--)
   printf("%d%d\n", i, j);
}
```

A. 1 0 B. 2 1 C. 1 1 D. 2 0

goclasses2024_wq15 goclasses programming programming-in-c 1-mark

Answer key

1.3.9 Programming In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 7 top

What is the value printed by the following program?

```
int main()
{
   int a = 0, b = 1, c = 0, d =-1;
   d = (++a) && (--b) && (++c) ||(--a);
   printf("%d", d);
}
```

A. 0 B. 1 C. -1 D. 2

goclasses2024_wq15 goclasses programming programming-in-c 1-mark

Answer key

1.4 Storage Classes In C (4) top

1.4.1 Storage Classes In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 10

Consider the below program written into 2 files.

f1.c

```
#include <stdio.h>
extern int x;

void fun(){
    printf("%d", x);
}
```

f2.c

```
#include <stdio.h>

static int x;
void fun();

main() {
    fun();
    printf("%d", x);

}
```

Note that compilation of f1.c and f2.c happens independently of each other.

Which of the following is TRUE?

A. f1.c and f2.c can be compiled independently.
B. f1.c will produce a compilation error since variable x does not get any memory, and we are using it in printf.
C. f1.c and f2.c can be compiled and linked. The output of the program will be 00.
D. f2.c will produce a compilation error since function fun() is not defined in 2.c.

goclasses2024_wq15 goclasses programming programming-in-c storage-classes-in-c output 1-mark

Answer key

1.4.2 Storage Classes In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 12

Consider the following variable and function definitions:

```
int g=10;
int q3() {
   static int g=5;
   return ++g;
}
int q4() {
   extern int g;
   return ++g;
}
int q5() {
   int g=1;
   return ++g;
}
```

What is the value of the expression $q3() + q3() + q4() + q4() + q5() + q5()$?

A. 32 B. 34 C. 38 D. 40

goclasses2024_wq15 goclasses programming programming-in-c functions storage-classes-in-c 2-marks

Answer key

1.4.3 Storage Classes In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 14

Consider the following two c files which both include the same $.h$ file:

```
// a.h
(1)     int inc(int x) { return x + 1; }
(2)     int x;
(3)     int y;
(4)     int z;
(5)     void b(void);
```

```
// a.c
#include "a.h"
#include <stdio.h>

(6)     int y = 1;
(7)     int w;
(8)     int v = 5;

int main()
{
    x = inc(0);
    z += 4;
    b();
    printf("x = %d y = %d z = %d "
           "w = %d v = %d\n",
            x, y, z, w, v);
    return 0;
}
```

```
// b.c
#include "a.h"

(9)     int w = 4;
(10)    int v = 5;

void b() {
    x = inc(x);
    y++;
    z--;
    v++;
}
```

When compiled, linked, and executed, the following output results:
$x = 1\ y = 2\ z = 3\ w = 4\ v = 5$
Assuming that this program compiled and linked successfully, and based on the output shown above, add static and/or extern modifiers to the blank lines (1) through (10).

Leave them blank if neither modifier would be appropriate.

For example, if we say line (2) is static then we consider line (2) as "static int x". Or if we say line (9) is empty then we treat line 9 as "$\text{int w} = 4$".

A.
Line(1) – empty
Line(2) - static
Line(3) - empty
Line(4) - extern
Line(5) – empty
Line(6) - empty
Line(7) - empty
Line(8) - static
Line(9) - empty
Line(10) - static

B.
Line(1) – static
Line(2) - static
Line(3) - extern
Line(4) - empty
Line(5) – extern
Line(6) - empty
Line(7) - extern
Line(8) - static
Line(9) - empty
Line(10) - static

C.
Line(1) – static
Line(2) - static
Line(3) - empty
Line(4) - empty
Line(5) – empty
Line(6) - empty
Line(7) - empty
Line(8) - static
Line(9) - empty
Line(10) - static

D.
Line(1) – empty
Line(2) - static
Line(3) - empty
Line(4) - empty
Line(5) – extern
Line(6) - empty
Line(7) - empty
Line(8) - static
Line(9) - empty
Line(10) - static

goclasses2024_wq15 goclasses programming programming-in-c storage-classes-in-c multiple-selects 2-marks

Answer key

1.4.4 Storage Classes In C: GO Classes 2024 | Weekly Quiz 15 | Programming | Question: 9 top

As shown below, the file $f.c$ defines a function f whose code refers to the variable x that is not a local variable or a parameter. The file $g.c$ defines a function g whose code refers to the variable x that is not a local variable or a parameter.

```
// file f.c
// declaration for x

void f(int a){
   ...
   x = ...
}
```

```
// file g.c
// declaration for x

void g(char* p){
   ...
   x = ...
}
```

The following table below shows how the variable x is defined in each file. For each row in the table, indicate in Column (c) whether the two functions at run-time refer to the SAME identifier (memory location) or to DIFFERENT identifiers (memory locations)

Column A declaration in f.c	Column B declaration in g.c	Column C SAME or DIFFERENT
int x;	extern int x;	**SAME**
int x = 0;	static int x;	
static int x;	static int x;	
static int x;	extern int x = 0;	

The first row of column C has been filled for hints. What will be in the 2nd, 3rd, and 4th row of Column C, respectively?

A. SAME, DIFFERENT, DIFFERENT
B. SAME, SAME, SAME
C. DIFFERENT, DIFFERENT, DIFFERENT
D. DIFFERENT, SAME, DIFFERENT

goclasses2024_wq15 goclasses programming programming-in-c storage-classes-in-c 1-mark

Answer key

Answer Keys

1.1.1	A;B;C;D	1.2.1	B;D	1.3.1	C;D	1.3.2	B;C	1.3.3	A;B;C;D
1.3.4	C	1.3.5	C	1.3.6	B	1.3.7	A	1.3.8	A
1.3.9	A	1.4.1	A	1.4.2	D	1.4.3	B	1.4.4	C