

Tutorial-2

Objective C and CPP

Q1- In the following program where is the variable a getting defined and where it is getting declared?

```
#include<stdio.h>
int main(){
    extern int a;
    printf("%d\n",a);
    return 0;
}
int a=20;
```

- a) extern int a is declaration, int a = 20 is the definition
- b) int a = 20 is declaration, extern int a is the definition
- c) int a = 20 is definition, a is not defined
- d) A is declared, a is not defined

Q2- A programmer writes a program to print the sum of all perfect cubes from 0 to 100:

```
int i=0, a, sum=0; // statement 1
a= (i*i*i)
while (i<100) // statement 2
{
    sum = sum +a; // statement 3
    i= i+1;
    a = i*i*i // statement 4
}
print sum
```

Does this program have any error? If yes, which statement will you modify to correct the program?

- a) No error
- b) Statement 1
- c) Statement 2
- d) Statement 3
- e) Statement 4

Q3- Consider the following code:

```
if (condition 1) {
if (condition 2)
{ // Statement A }
else
if (condition 3)
{ // Statement B }
```

```

else
{ // Statement C }
else
if (condition 4)
{ // Statement D }
else
{ // Statement E }
}

```

Which of the following conditions will allow execution of statement C?

- a) condition1 AND condition3
- b) condition1 AND condition4 AND !condition2
- c) NOT(condition2) AND NOT(condition3)
- d) condition1 AND NOT(condition2) AND NOT(condition3)

Q4- function g(int n)

```

{
if (n > 0) return 1;
else return -1;
}
function f(int a, int b)
{
if (a > b) return g(b-a);
if (a < b) return g(a-b);
return 0;
}

```

If f(a,b) is called, what is returned?

- a) Always -1
- b) 1 if a > b, -1 if a < b, 0 otherwise
- c) -1 if a > b, 1 if a < b, 0 otherwise
- d) 0 if a equals b, -1 otherwise

Q5- In a sequential programming language, code statements are executed in which order?

- a) All are executed simultaneously
- b) From top to bottom
- c) From bottom to top
- d) None of these

Q6- Consider the following function

```

function calculate( n )
{
if(n equals 5)
return 5
else

```

```
return (n + calculate(n-5))
end
}
```

User calls the function by the statement, calculate(20). What value will the function return?

- a) 50
- b) 200
- c) 35
- d) 20

Q7- Programmer X wants to write a program which checks whether the inputted number is divisible by any of the first 6 natural numbers (excluding 1). He writes the following efficient code for it.

```
int number, n = 2, isdivisible=0
input number
while ( n <=6) // Statement 1
{
    if ( remainder (number, n) == 0)
        isdivisible = 1
    end
    n = n+1 // Statement 2
}
if (isdivisible equals 1)
    print "It is divisible"
else
    print "It is not divisible"
end
```

X takes the program to Y. Now Y tells X that though the code is correct, it can be made more efficient. Y modifies a single statement and makes the code more efficient. Which statement does he modify and how?

- a) Statement 1 is changed to: while (n <=6 AND isdivisible=0)
- b) Statement 1 is changed to: while (n <=6 OR isdivisible=0)
- c) Statement 1 is changed to: while (isdivisible=0)
- d) Statement 2 is changed to: n = n + 2

Q8- Vijay wants to print the following pattern on the screen:

```
2
2 4
2 4 6
2 4 6 8
```

He writes the following program:

```
integer i = 1, j=2 // statement 1
while ( i <= 4 ) // statement 2
```

```

{
j = 2;
while ( j <= ? ) // Statement 3
{
print j
print blank space
j = j + 2
}
print end-of-line \takes the cursor to the next line
i = i + 1
}

```

What is the value of ? in statement 3 ::

- a) 8
- b) 1
- c) 2*i
- d) 4

Q9- short int x; /* assume x is 16 bits in size */

What is the maximum number that can be printed using printf("%d\n", x), assuming that x is initialized as shown above?

- a) 127
- b) 128
- c) 255
- d) 32,767

Q10- #include <stdio.h>

```

void func()
{
int x = 0;
static int y = 0;
x++; y++;
printf( "%d -- %d\n", x, y );
}
int main()
{
    func();
    func();
    return 0;
}

```

What will the code above print when it is executed?

- a) 1 -- 1 1 -- 1
- b) 1 -- 1 2 -- 1
- c) 1 -- 1 2 -- 2
- d) 1 -- 0 1 -- 0

e) 1 -- 1 1 – 2

Q11- What will be the output of the program given below?

```
#include<stdio.h>
int main()
{
    char ch;
    while(x=0;x<=255;x++)
        printf("ASCII value of %d character %c\n", x, x);
    return 0;
}
```

- a) The code generates an infinite loop
- b) The code prints all ASCII values and its characters
- c) Error: x undeclared identifier
- d) Error: while statement missing

Q12- What is the output of the program?

```
#include<stdio.h>
#include<math.h>
int main()
{
    float n=1.54;
    printf("%f, %f\n", ceil(n), floor(n));
    return 0;
}
```

- a) 2.000000, 1.000000
- b) 1.500000, 1.500000
- c) 1.550000, 2.000000
- d) 1.000000, 2.000000

Q13- Code:

```
int x[] = { 1, 4, 8, 5, 1, 4 };
int *ptr, y;
ptr = x + 4;
y = ptr - x;
```

What does y in the sample code above equal?

- a) -3
- b) 0
- c) 4
- d) 4 + sizeof(int)

Q14- Point out the error in the program:

```
#include<stdio.h>
Int main()
{
int I;
#if A
    printf("Enter any number:");
    scanf("%d", &i);
#elif B
    printf("The number is odd");
return 0;
}
```

- a) Error: unexpected end of file because there is no matching #endif
- b) The number is odd
- c) Garbage value
- d) None of the above

Q15- What will be the output of the program?

```
#include<stdio.h>
#include<string.h>
int main()
{
    char *str1 = "India",
    char *str2 = "BIX";
    char *str3;
    str3 = strcat(str1, str2);
    printf("%s %s\n", str3, str1);
    return 0;
}
```

- a) IndiaBIX India
- b) IndiaBIX IndiaBIX
- c) India India
- d) Error

Q16- Which of the following statements are correct about the below program?

```
#include<stdio.h>
int main()
{
    union a
    {
        int I;
        char ch[2];
    };
}
```

```

    union a u1 = {512};
    union a u2 = {0, 2};
    return 0;
}

```

- 1: u2 cannot be initialized as shown.
- 2: U1 can be initialized as shown.
- 3: To initialize char ch[] of u2 '.' Operator should be used.
- 4: The code causes an error 'Declaration syntax error'

- a) 1,2
- b) 2,3
- c) 1,2,3
- d) 1,3,4

Q17- What will be the output of the program?

```

#include<stdio.h>
int get();
int main()
{
    const int x = get();
    printf("%d", x);
    return 0;
}
int get()
{
    return 20;
}

```

- a) Garbage value
- b) Error
- c) 20
- d) 0

Q18- Point out the correct statement which correctly free the memory pointed to by 's' and 'p' in the following program?

```

#include<stdio.h>
#include<stdlib.h>
Int main()
{
    struct ex
    {
        int l;
        float j;
        char *s;
    };
}

```

```

    struct ex *p;
    p = (struct ex *)malloc(sizeof(struct ex));
    p->s = (char *)malloc(20);
    return 0;
}

```

- a) Free(p); , free(p->s);
- b) Free(p->s); , free(p);
- c) Free(p->s);
- d) Free(p);

Q19- #define MAX_NUM 15

Referring to the sample above, what is MAX_NUM?

- a) MAX_NUM is an integer variable.
- b) MAX_NUM is a linker constant.
- c) MAX_NUM is a precompiler constant.
- d) MAX_NUM is a preprocessor macro.
- e) MAX_NUM is an integer constant.

Q20- What will be the output of the program?

```

#include<stdio.h>
int main()
{
    float arr[ ] = { 12.4, 2.3, 4.5, 6.7};
    printf("%d\n", sizeof(arr)/sizeof(arr[0]));
    return 0;
}

```

- a) 5
- b) 4
- c) 6
- d) 7

Q21- What function should be used to free the memory allocated by calloc() ?

- a) Dealloc();
- b) Malloc(variable_name, 0)
- c) Free();
- d) Memalloc(variable_name, 0)

Q22- What does the "auto" specifier do?

- a) It automatically initializes a variable to 0.
- b) It indicates that a variable's memory automatically be preserved
- c) It automatically increments the variable when used.

- d) It automatically initializes a variable.
- e) It indicates that a variable's memory space is allocated upon entry into the block.

Q23- Which of the following cannot be checked in a switch-case statement?

- a) character
- b) int
- c) float
- d) enum

Q24- Point out the error, if any in the program.

```
#include<stdio.h>
int main()
{
    int a = 10, b;
    a>=5 ? b=100 : b=200;
    printf("%d\n",b);
    return 0;
}
```

- a) 100
- b) 200
- c) Error: L value required for b
- d) Garbage value

Q25- What will be the output of the program?

```
#include<stdio.h>
int main()
{
    int i=4, j=-1, k=0, w, x, y, z;
    w = i || j || k;
    x = i && j && k;
    y = i || j && k;
    z = i && j || k;
    printf("%d, %d, %d, %d\n", w, x, y, z);
    return 0;
}
```

- a) 1, 1, 1, 1
- b) 1, 1, 0, 1
- c) 1, 0, 0, 1
- d) 1, 0, 1, 1

Q26- What will be the output of the program?

```
#include<stdio.h>
int main()
```

```

{
    char *str;
    str = "%d\n";
    str++;
    Str++;
    printf(str-2, 300);
    return 0;
}

```

- a) No output
- b) 30
- c) 3
- d) 300

Q27- What will be the output of the program if the array begins at 65472 and each integer occupies 2 bytes?

```

#include<stdio.h>
int main()
{
    int a[3] [4] = { 1, 2, 3, 4, 4, 3, 2, 1, 7, 8, 9, 0};
    printf("%u, %u\n", a+1, &a+1);
    return 0;
}

```

- a) 65474, 65476
- b) 65480, 65496
- c) 65480, 65488
- d) 65474, 65488

Q28- What will be the output of the program?

```

int main()
{
    char sentence[80];
    int i;
    printf("Enter a line of text\n");
    gets(sentence);
    for(i=strlen(sentence)-1; i>=0; i--)
        putchar(sentence[i]);
    return 0;
}

```

- a) The sentence will get printed in same order as it entered
- b) The sentence will get printed in reverse order
- c) Half of the sentence will get printed
- d) None of the above

Q29- What will be the output of the program?

```

#include<stdio.h>
struct coure
{
    int courseno;
    char coursename[25];
}
int main()
{
    Struct course c[ ] = { { 102, "Java"},
                           {103, "PHP"},
                           {104, "DotNet"} };
    printf("%d ", c[1].courseno);
    printf("%s\n", (*(c+2)).coursename);
    return 0;
}

```

a) 103 DotNet
b) 102 Java
c) 103 PHP
d) 104 DotNet

Q30- What does the following declaration signify?

```
int *f();
```

- a)** f is a pointer variable of function type
- b)** f is a function returning pointer to an int
- c)** f is a function pointer
- d)** f is a simple declaration of pointer variable