MCQ

Q1: In situations where we need to execute body of the loop before testing the condition, we should use _____.

a)for loop

b)while loop

c)do while loop

d)nested for loop

Ans:- OPTION C

Q2. What error would the following function give on compilation?

```
fun(int a, int b)
{
int a = 20;
return a;
}
```

a) no error

b) The function should be defined as int fun(int a,int b)

c) Re-declaration of variable a

d) none of the above

Answer : OPTION C. Redeclaration of variable is not allowed

Q.3. What will be the result of given code?

```
main()
{
int i = 1;
for( ; ; )
{
printf("%d",i++);
if(i > 5)
```

```
break;
}
}
```

a)1 2 3 4 5

b) error because condition in for loop is must

c) error because of two semicolon inside for loop.

d) error because of break inside for loop.

Ans:- OPTION A

Q.4.In C language all function except main() can be recursive?

a) Yes

b) No

Answer : OPTION B Any function including main() can be called recursively.

Q.5. Which keyword is used to transfer control from a function back to the calling function?

a) switch

b) Break

c) goto

d) return

Answer : OPTION D

Q.6. Which of the following statements are correct about the function?

```
int fun(int x)
{
int r = 1;
if(x==1)
return 1;
else
r = x * fun(x-1);
return r;
```

}

a) The function calculates the 2 raise to power of x.

b) The function calculates the square root of x.

c) The function return the cube of x.

d) The function calculates factorial of x.

Answer : OPTION D

Q.7. Functions cannot return more than one value at a time. True or False?

a) True

b) False

Answer : OPTION A

Q.8. Which of the following statement is true about a function with an argument?

a) No value is pass to the function during function call.

b) function with an argument must not have return type

c) function with an argument is declared and define with parameter list

d) none of the above

Answer : OPTION C

Q.9. A function can be defined inside another function?

a) True

b) False

Answer : OPTION B

Q.10. A self contained block of statements that perform a coherent task of some kind is called _____.

a) a Monitor

b) a Function

c) a Program

d) a Structure

Answer : OPTION B, a Function.

Q.11. The name of all functions end with a _____.

a) pair of parenthesis.

b) semicolon

c) braces

d) colon

Answer : OPTION A

Q.12. max is a function that returns the larger of the two integers, given as arguments. Which of the following statements not finds the largest of three given numbers?

a) max(max(a, b), max(a, c))

b) max(a, max(a, c))

c) max(max(a, b), max(b, c))

d) max(b, max(a, c))

Answer: OPTION B

Q.13. What is the output of the following program?

```
main()
{
int a = 4;
change(a);
printf("%d", a);
}
change(a)
{
printf("%d", ++a);
```

}

a) 55

b)45

c) 54

d) 44

Answer: OPTION C

Q.14. The following program _____.

main()

{

inc(); inc(); inc();

}

inc()

{

static int x;

printf("%d", ++x);

}

a) prints 012

b) prints 123

c) prints 3 consecutive, but unpredictable numbers

d) prints 111

Answer: OPTION B

Q.15. scanf() can be used for reading _____?

A. Double integer

B. Single integer

C. Multiple integers

D. No integer

Correct Answer : OPTION C

Q.16. The statement that transfers control to the beginning of the loop is called _____.

A. break statement

B. exit statement

C. continue statement

D. goto statement

Correct Answer : OPTION C

Q.17. A variable which is visible only in the function in which it is defined, is called _____.

A. static variable

B. auto variable

C. external variable

D. local variable

Correct Answer : OPTION D

Q.18. Output of the program given below is?

```
int i;
main()
{
printf("%d", i);
}
```

A. 1

B. 0

C. Garbage value

D. Null

Correct Answer : OPTION B

Q.19. How many times the following program would print "abc"?

```
main()
{
printf("\nabc");
main();
}
```

A. Infinite number of times.

B. 32767 times

C. 65535 times

D. Till the stack does not overflow.

Answer : Option A

Q.20. What will be the output of the program if the array begins at 1200 in memory?

```
main()
{
int arr[] = {2, 3, 4, 1, 6};
printf("%u, %u, %u\n", arr, &arr[0], &arr);
return 0;
}
```

A. 1200, 1202, 1204

B. 1200, 1200, 1200

C. 1200, 1204, 1208

D. 1200, 1202, 1200

Correct Answer : OPTION B. All the three - arr, &arr[0] and &arr represents the base address of the array.

Q.21. Which of the following function is appropriate for reading In a multi-word string?

A. printf()

B. scanf()

C. gets()

D. puts()

Correct Answer : OPTION C

Q.22. Which of the following is not a valid declaration of arrays?

A. int marks[4] = { 67, 87, 56, 77 }

B. float area[5] = { 23.4, 6.8, 5.5 }

C. int marks[] = { 67, 87, 56, 77, 59 }

D. int marks[4] = { 67, 87, 56, 77, 59 }

Correct Answer : OPTION D

Q.23. What will be the output of given code.

```
main()
{
char ch[20];
ch = “Hi Hello";
printf("%s", ch);
}
```

A. error

B. Hi Hello

C. Hi

D.Hello

Correct Answer : OPTION A

Q.24. What will be the output of given code?

```
main()
```

```
{
int arr[3] = {1, 2};
printf("%d", &arr[2]);
}
```

A. Error

B. garbage value

C. 1

D. 2

Correct Answer : OPTION B

Q.25. What will be the output of given code?

```
main()
{
char str[7] = "strings";
printf("%s", str);
}
```

A. error

B. strings

C. cannot predict

D. none of the above

Correct Answer : OPTION B.

Q.26. Which of the following function is used to show reverse of string?

A. reverse()

B. strrev()

C. strreverse()

D. none of the above

Correct Answer : OPTION B

Q.27. Which of the following represent null character in C language?

A. 0

B. /0

C. \0

D. none of the above

Correct Answer : OPTION C

Q.28. Which library file contain all the string handling functions?

A. stdio.h

B. conio.h

C. string.h

D. none of the above

Correct Answer : OPTION C

Q.29. What will be the output of given code?

```
#include<stdio.h>
#include<string.h>
main()
{
int i;
i = strcmp(“Hi", “hello");
printf("%d",i);
}
```

A. error

B. -1

C. 0

D. 1

Correct Answer : OPTION B. strcmp() function will return the ASCII difference between first unmatching character of two strings.

Q.30. What will be the output of the following code snippet?

```
#include <stdio.h>

void solve()

{

   int a[] = {1, 2, 3, 4, 5};

   int sum = 0;

   for(int i = 0; i < 5; i++) {

      if(i % 2 == 0) {

         sum += *(a + i);

      }

      else {

         sum -= *(a + i);

      }

   }

   printf("%d", sum);

}

int main()

{

solve();

return 0;

}
```

A) 2

B) 15

C) sytax error

D) 3

Correct Answer: OPTION D

Q.31. What will be the output of the following code snippet?

```
#include <stdio.h>
void solve() {
   int first = 10, second = 20;
   int third = first + second;
   {
      int third = second - first;
      printf("%d ", third);
   }
   printf("%d", third);
}
int main() {
solve();
return 0;
}
```

A) 10 30

B) 30 10

C) 10 20

D) 20 10

Correct Answer: OPTION A

Q.32. What will be the output of the following code snippet?

```
#include <stdio.h>
```

```
void solve() {
   int a = 3;
   int res = a++ + ++a + a++ + ++a;
   printf("%d", res);
}
int main() {
solve();
return 0;
}
```

A) 12

B) 24

C) 20

D) 18

Correct Answer: OPTION C

Q.33. What will be the value of x in the following code snippet?

```
#include <stdio.h>
void solve() {
   int x = printf("Hello");
   printf(" %d", x);
}
int main() {
solve();
return 0;
}
```

A) 10

B) 5

C) 1

D) 0

Correct Answer: OPTION B

Q.34. Which of the following is an exit controlled loop?

A) while loop

B) for loop

C) do--while loop

D) None of the above

Correct Answer: OPTION C

Q.35. What will be the output of the following code snippet?

```
#include <stdio.h>
void swap(int *a, int *b) {
   int t = *a;
   *a = *b;
   *b = t;
}
void solve() {
   int a = 3, b = 5;
   swap(&a, &b);
   printf("%d %d", a, b);
}
int main() {
solve();
return 0;
}
```

A) 3 5

B) 5 3

C) 5 5

D) 3 3

Correct Answer: OPTION B

Q.36. What will be the result of the following code snippet?

```
#include <stdio.h>
void solve() {
   char ch[10] = "abcdefghij";
   int ans = 0;
   for(int i = 0; i < 10; i++) {
      ans += (ch[i] - 'a');
   }
   printf("%d", ans);
}
int main() {
   solve();
return 0;
}
```

A) 45

B) 36

C) 20

D) 100

Correct Answer: OPTION A

The function basically calculates the sum of ASCII values of the characters of the string.

Q.37. A pointer is

A) A keyword used to create variables

B) A variable that stores address of an instruction

C) A variable that stores address of other variable

D) All of the above

Answer: Option C

Q.38. The operator used to get value at address stored in a pointer variable is

A) *

B) &

C) &&

D) ||

Answer: Option A

Q.39. Are the expression *ptr++ and ++*ptr are same?

A) True

B) False

Answer: Option B

Explanation:*ptr++ increments the pointer and not the value, whereas the ++*ptr increments the value being pointed by ptr

Q.40. Will the program compile?

```
#include<stdio.h>

int main()

{

   char str[5] = "WelcomeIndia";

   return 0;

}
```

A) Yes

B) No

Answer: Option A

Explanation:

C doesn't do array bounds checking at compile time, hence this compiles.

But, the modern compilers like Turbo C++ detects this as 'Error: Too many initializers'.

GCC would give you a warning.

Q.41. The following program reports an error on compilation.

```
#include<stdio.h>
int main()
{
   float i=10, *j;
   void *k;
   k=&i;
   j=k;
   printf("%f\n", *j);
   return 0;
}
```

A) True

B) False

Answer: Option B

Explanation: This program will NOT report any error. (Tested in Turbo C under DOS and GCC under Linux)

The output: 10.000000

Q.42. Is the NULL pointer same as an uninitialized pointer?

A) Yes

B) No

Answer: Option B

Q.43. Will the program compile in Turbo C?

```
#include<stdio.h>
int main()
{
   int a=10, *j;
   void *k;
   j=k=&a;
   j++;
   k++;
   printf("%u %u\n", j, k);
   return 0;
}
```

A) Yes

B) No

Answer: Option B

Explanation: Error in statement k++. We cannot perform arithmetic on void pointers

The following error will be displayed while compiling above program in TurboC.

Q.44. Point out the compile time error in the program given below.

```
#include<stdio.h>
int main()
{
   int *x;
   *x=100;
   return 0;
}
```

A) Error: invalid assignment for x

B) Error: suspicious pointer conversion

C) No error

D) None of above

Answer: Option C

Explanation: While reading the code there is no error, but upon running the program having an un-initialised variable can cause the program to crash (Null pointer assignment).

Q.45. Point out the error in the program.

```
#include<stdio.h>
int main()
{
   int a[] = {10, 20, 30, 40, 50};
   int j;
   for(j=0; j<5; j++)
   {
      printf("%d\n", a);
      a++;
   }
   return 0;
}
```

A) Error: Declaration syntax

B) Error: Expression syntax

C) Error: LValue required

D) Error: Rvalue required

Answer: Option C

Q.46. What will happen if in a C program you assign a value to an array element whose subscript exceeds the size of array?

A) The element will be set to 0.

B) The compiler would report an error.

C) The program may crash if some important data gets overwritten.

D) The array size would appropriately grow.

Answer: Option C

Explanation: If the index of the array size is exceeded, the program will crash. Hence "option c" is the correct answer. But the modern compilers will take care of this kind of errors.

Q.47. What does the following declaration mean?

int (*ptr)[10];

A) ptr is array of pointers to 10 integers

B) ptr is a pointer to an array of 10 integers

C) ptr is an array of 10 integers

D) ptr is an pointer to array

Answer: Option B

Q.48. In C, if you pass an array as an argument to a function, what actually gets passed?

A) Value of elements in array

B) First element of the array

C) Base address of the array

D) Address of the last element of array

Answer: Option C

Explanation: The statement 'C' is correct. When we pass an array as a funtion argument, the base address of the array will be passed.

Q.49. Point out the error in the program.

```
f (int a, int b)
{
   int a;
   a = 20;
```

```
    return a;
}
```

A) Missing parenthesis in return statement

B) The function should be defined as int f(int a, int b)

C) Redeclaration of a

D) None of above

Answer: Option C

Explanation: f (int a, int b) The variable a is declared in the function argument statement. int a; Here again we are declaring the variable a. Hence it shows the error "Redeclaration of a".

Q.50. Point out the error in the program.

```
#include<stdio.h>
int f(int a)
{
  a > 20? return(10): return(20);
}
int main()
{
    int f(int);
    int b;
    b = f(20);
    printf("%d\n", b);
    return 0;
}
```

A) Error: Prototype declaration

B) No error

C) Error: return statement cannot be used with conditional operators

D) None of above

Answer: Option C

Explanation: In a ternary operator, we cannot use the return statement. The ternary operator requires expressions but not code.

Q.51. Point out the error in the program.

```
#include<stdio.h>

int main()

{

   int a=10;

   void f();

   a = f();

   printf("%d\n", a);

   return 0;

}

void f()

{

   printf("Hi");

}
```

A) Error: Not allowed assignment

B) Error: Doesn't print anything

C) No error

D) None of above

Answer: Option A

Explanation: The function void f() is not visible to the compiler while going through main() function. So we have to declare this prototype void f(); before to main() function. This kind of error will not occur in modern compilers.

Q.52. If the two strings are identical, then strcmp() function returns

A) -1

B) 1

C) 0

D) Yes

Answer: Option C

Q.53. How will you print \n on the screen?

A) printf("\n");

B) echo "\\n";

C) printf('\n');

D) printf("\\n");

Answer: Option D

Q.54. Which of the following function is correct that finds the length of a string?

A) int xstrlen(char *s)

```
{
   int length=0;
   while(*s!='\0')
   {    length++; s++; }
   return (length);
}
```

B) int xstrlen(char s)

```
{
   int length=0;
   while(*s!='\0')
      length++; s++;
   return (length);
```

```
}
```

C)
```
int xstrlen(char *s)
{
   int length=0;
   while(*s!='\0')
      length++;
   return (length);
}
```

D)
```
int xstrlen(char *s)
{
   int length=0;
   while(*s!='\0')
      s++;
   return (length);
}
```

Answer: Option A

Explanation: Option A is the correct function to find the length of given string.

Q.55. What will be the output of the program ?

```
#include<stdio.h>
#include<string.h>
int main()
{
   char str1[20] = "Hello", str2[20] = " World";
   printf("%s\n", strcpy(str2, strcat(str1, str2)));
```

```
    return 0;
}
```

A) Hello

B) World

C) Hello World

D) WorldHello

Answer: Option C

Q.56. What will be the output of the program ?

```
#include<stdio.h>
#include<string.h>
int main()
{
    printf("%d\n", strlen("123456"));
    return 0;
}
```

A) 6

B) 12

C) 7

D) 2

Answer: Option A

Explanation: The function strlen returns the number of characters in the given string. Therefore, strlen("123456") returns 6. Hence the output of the program is "6".

Q.57. What will be the output of the program ?

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

```
{
   char str[] = "Hello\0\World\0";
   printf("%s\n", str);
   return 0;
}
```

A) World

B) Hello

C) Hello World

D) Hello\0World

Answer: Option B

Q.58. What will be the output of the program If characters 'a', 'b' and 'c' enter are supplied as input?

```
#include<stdio.h>
int main()
{
   void fun();
   fun();
   printf("\n");
   return 0;
}
void fun()
{
   char c;
   if((c = getchar())!= '\n')
      fun();
   printf("%c", c);
}
```

A) abc abc

B) bca

C) Infinite loop

D) cba

Answer: Option D

Q.59. What will be the output of the program ?

```
#include<stdio.h>
int main()
{
   printf("Hi", "Hello\n");
   return 0;
}
```

A) Error

B) Hi Hello

C) Hi

D) Hello

Answer: Option C

Q.60. What will be the output of the program ?

```
#include<stdio.h>
int main()
{
   char str[7] = "HelloWorld";
   printf("%s\n", str);
   return 0;
}
```

A) Error

B) HelloWorld

C) Cannot predict

D) None of above

Answer: Option C

Q.61. What will be the output of the program ?

```
#include<stdio.h>
int main()
{
   char *names[] = { "Suresh", "Siva", "Sona", "Baiju", "Ritu"};
   int i;
   char *t;
   t = names[3];
   names[3] = names[4];
   names[4] = t;
   for(i=0; i<=4; i++)
      printf("%s,", names[i]);
   return 0;
}
```

A) Suresh, Siva, Sona, Baiju, Ritu

B) Suresh, Siva, Sona, Ritu, Baiju

C) Suresh, Siva, Baiju, Sona, Ritu

D) Suresh, Siva, Ritu, Sona, Baiju

Answer: Option B

Q.62. What will be the output of the program ?

```
#include<stdio.h>
```

```
#include<string.h>

int main()

{

   char str[] = "Hello\0\hi\0";

   printf("%d\n", strlen(str));

   return 0;

}
```

A) 10

B) 6

C) 5

D) 11

Answer: Option C

Q.63. Which of the following statements are correct about the below declarations?

```
char *p = "Sanjay";

char a[] = "Sanjay";
```

1: There is no difference in the declarations and both serve the same purpose.

2: p is a non-const pointer pointing to a non-const string, whereas a is a const pointer pointing to a non-const pointer.

3: The pointer p can be modified to point to another string, whereas the individual characters within array a can be changed.

4: In both cases the '\0' will be added at the end of the string "Sanjay".

A) 1, 2

B) 2, 3, 4

C) 3, 4

D) 2, 3

Answer: Option B

Q.64. Which of the following statements are correct ?

1: A string is a collection of characters terminated by '\0'.

2: The format specifier %s is used to print a string.

3: The length of the string can be obtained by strlen().

4: The pointer CANNOT work on string.

A) 1, 2

B) 1, 2, 3

C) 2, 4

D) 3, 4

Answer: Option B

Explanation: Clearly, we know first three statements are correct, but fourth statement is wrong. because we can use pointer on strings. Eg. char *p = "HelloWorld".

Q.65. Which of the following statement is correct?

A) strcmp(s1, s2) returns a number less than 0 if s1>s2

B) strcmp(s1, s2) returns a number greater than 0 if s1<s2

C) strcmp(s1, s2) returns 0 if s1==s2

D) strcmp(s1, s2) returns 1 if s1==s2

Answer: Option C

Q.66. Will the program compile successfully?

```
#include<stdio.h>
int main()
{
   char a[] = "Hello";
   char *p = "Welcome";
   a = "Welcome";
   p = "Hello";
```

```
    printf("%s %s\n", a, p);
    return 0;
}
```

A) Yes

B) No

Answer: Option B

Q.67. For the following statements will arr[3] and ptr[3] fetch the same character?

```
char arr[] = "India";
char *ptr = "India";
```

A) Yes

B) No

Answer: Option A

Q.68. Is there any difference between the two statements?

```
char *ch = "WELCOME";
char ch[] = "welcome";
```

A) Yes

B) No

Answer: Option A

Q.69. In a function that receives variable number of arguments the fixed arguments passed to the function can be at the end of argument list.

A) True

B) False

Answer: Option B

Q.70. For a function receives variable number of arguments it is necessary that the function should receive at least one fixed argument.

A) True

B) False

Answer: Option A

Q.71. Can we pass a variable argument list to a function at run-time?

A) Yes

B) No

Answer: Option B

Q.72. Is it necessary that in a function which accepts variable argument list there should be at least be one fixed argument?

A) Yes

B) No

Answer: Option A

Q.73. Can we write a function that takes a variable argument list and passes the list to another function?

A) Yes

B) No

Answer: Option A

Q.74. Can the fixed arguments passed to the function that accepts variable argument list, occur at the end?

A) Yes

B) No

Answer: Option B

Q.75. Can you use the fprintf() to display the output on the screen?

A) Yes

B) No

Answer: Option A

Q. 76. It is necessary that for the string functions to work safely the strings must be terminated with '\0'.

A) True

B) False

Answer: Option A

Q.77. If the two strings are found to be unequal then strcmp returns difference between the first non-matching pair of characters.

A) True

B) False

Answer: Option A

Q.78. The prototypes of all standard library string functions are declared in the file string.h.

A) Yes

B) No

Answer: Option A

Q.79. What will be the output of following code?

```
#include<stdio.h>
main()
{
   float a = 10.2;
   int *p = a;
   printf("%d",*p);
```

```
}
```

A) 10

B) 10.2

C) error: incompatible type

D) no output

Correct Answer : OPTION C, error: incompatible type.

Q.80. What will be the output of following code assuming that array begins at location 1002?

```
#include<stdio.h>
main()
{
   int a[5] = {1, 2, 3, 4, 5};
   int *p = a;
   printf("%d\t%d\t%d\t%d\t",*p,0[a],a,p);
}
```

A) error

B) 1 1 1002 1002

C) 1 0 1002 0

D) 1 1 0 1002

Correct Answer : OPTION B, 1 1 1002 1002

Q.81. What will be the output of following code?

```
#include <stdio.h>
void main()
{
   int const *p = 5;
   printf("%d", ++(*p));
```

}

A) error

B) 5

C) 6

D) print address of p

Correct Answer : OPTION A, Cannot modify a constant value. p is a pointer to a constant integer. But we tried to change the value of the constant integer.

Q.82. What will be the output of following code?

```
#include <stdio.h>

main()

{

   register i = 5;

   char j[] = "hello";

   printf("%s %d", j, i);

}
```

A) error

B) hello 5

C) hello

D) none of the above

Correct Answer : OPTION B, if you declare i as register compiler will treat it as ordinary integer and it will take integer value. i value may be stored either in register or in memory.

Q.83. Which of the statement is correct about the code?

```
int sum(int, int);

int (*s)(int, int);

s = sum;
```

A) s is a pointer to a function sum which return integer

B) s is a function which return integer pointer

C) s is a function similar to sum function

D) none of the above

Correct Answer : OPTION A

Q.84. What will be the output of following code?

```
#include <stdio.h>
int fun(int *a,int *b)
{
   *a = *a+*b;
   *b = *a-*b;
   *a = *a-*b;
}
main()
{
   int x = 10,y = 20;
   fun(&x,&y);
   printf("x= %d y = %d\n", x, y);
}
```

A) x=10 y=20

B) x=20 y=10

C) 20 10

D) error

Correct Answer : OPTION B, x=20 y=10.

Q.85. The code printf("%d",printf("tim")); _____.

A) results in a syntax error

B) output is tim3

C) outputs a garbage value

D) prints tim and terminates abruptly

Correct Answer : OPTION B, output tim3. Any function(including main()), returns a value to the calling environment. In the case of printf, it is the number of characters it printed. So, the output will be tim3.

Q.86. The following program fragment results in _____?

```
for(i = 1; i < 5 ; ++i)
{
   if(i == 3)
   {
      continue;
   }
   else
   {
      printf("%d", i);
   }
}
```

A) 1 2 4 5

B) 1 2 4

C) 2 4 5

D) none of the above

Correct Answer : OPTION B, 1 2 4

Q.87. What will be the output of the following loop?

```
for(i=1, j=10; i<6; ++i, --j)
{
   printf("%d %d", i, j);
```

}

A) 1 1 0 2 9 3 8 4 7 5 6

B) 1 2 3 4 5 10 9 8 7 6

C) 1 1 1 1 1 9 9 9 9 9

D) none of above

Correct Answer : OPTION A, 1 102 93 84 75 6

Q.88. What will sizeof(myArray) in the following type definition? (Assume one character occupies 1 byte)

typedef char x[10];

x myArray[5];

A) 15 bytes

B) 10 bytes

C) 50 bytes

D) 30 bytes

Correct Answer : OPTION C, 50 bytes

Q.89. The following program _____.

```
main()
{
   static int a[] = {7,8,9};
printf("%d", 2[a] + a[2]);
}
```

A) results in bus error

B) results in segmentation violation error

C) will not compile successfully

D) none of the above

Correct Answer : OPTION D, none of the above. It will print 18.

Q.90. In the following code fragment, on termination j will have the value?

```
i = 6720; j = 4;

while((i%j) == 0)

{

   i = i/j;

j = j+1;

}
```

A) 4

B) 8

C) 9

D) 6720

Correct Answer : OPTION C, 9

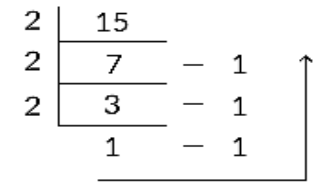
Coding

Q.1. Decimal to Binary conversion

Computer cannot understand decimal numbers, it understands only zeros and ones. Write a program to help computer by converting decimal number to binary.

Decimal to Binary

Input : 15



Binary Number : 1111

Considering the same example,

15 / 2 = 7 rem = 1,

7 / 2 = 3 rem = 1,

3 / 2 = 1 rem = 1,

1 / 2 = 0 rem = 1

Binary equivalent of 15 is 1111.

Sample Input 1
100

Sample Output 1
1100100

#Solution

```
#include <stdio.h>
long int decimal_to_binary(int n)
{
   long int binary = 0;
   int remainder, i, flag = 1;
   for (i = 1; n != 0; i = i * 10)
   {
      remainder = n % 2;
      n /= 2;
      binary += remainder * i;
   }
   return binary;
}
int main()
{
   int n;
   scanf("%d", &n);
   printf("%d",decimal_to_binary(n));
   return 0;
}
```

Q.2. Number of Handshakes

It was Raj's first day at school. His teacher Anu asked the students to meet every other student in the class and to introduce about themselves. The teacher asked them to do handshakes when they meet each other.

If there are n number of students in the class then find the total number of handshakes made by the students.

- Input the number of people (n).
- Find nC2, calculated as n * (n-1) / 2.
- Print the calculated result.

Sample Input 1
15

Sample Output 1
105

#Solution

```
#include<stdio.h>

int main()

{

   int num;

   scanf("%d", &num);

   int total = num * (num - 1) / 2;

   printf("%d", total);

   return 0;

}
```

Q.3. Occurrence of digit

Write a program to find the number of times digit m occurs in each and every number from 0 to n. Given a number n as input, count the number of m’s occurring in range from 0 to n. (value of range will be from 0 to n)

For example,

Input1: 100

Input2: 3

Output: 20

Total number of 3s that appear from numbers 0 to 100 are {3, 13, 23, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 43, 53, 63, 73, 83, 93}

Sample Input 1
50
5

Sample Output 1
6

#Solution

```
#include <stdio.h>
int counts(int n, int m)
{
    int count = 0;
    while (n > 0)
    {
        if (n % 10 == m)
        {
            count++;
        }
        n = n / 10;
    }
    return count;
}
int count_in_range(int n,int m)
{
    int count = 0,i;
    for (i = 2; i <= n; i++)
    {
        count += counts(i,m);
    }
    return count;
```

```
}


int main()
{
  int n,m;
  scanf("%d %d", &n, &m);
  printf("%d",count_in_range(n,m));
  return 0;
}
```

Q.4. String sorting

Given a string, the task is to sort the string in alphabetical order and display it as output.

Sample Input 1
face

Sample Output 1
acef

#Solution

```
#include <stdio.h>
#include <string.h>
int main()
{
    char string[100];
    scanf("%s", string);
    char temp;
    int i, j;
    int n = strlen(string);
    for (i = 0; i < n - 1; i++)
    {
```

```
        for (j = i + 1; j < n; j++)
        {
            if (string[i] > string[j])
            {
                temp = string[i];
                string[i] = string[j];
                string[j] = temp;
            }
        }
    }
    printf("%s", string);
    return 0;
}
```

Q.5. Print only alphabet

A string is obtained as input from the user and all the characters other than the alphabets are removed from the string and the output string containing only the alphabets is displayed.

Sample Input 1
We23lc333om@#e

Sample Output 1
Welcome

#Solution

```
#include<stdio.h>

int main()

{
    char input[150];
    int i, j;
    gets(input);
    for (i = 0; input[i] != '\0'; ++i)
    {
```

```
        while (!((input[i] >= 'a' && input[i] <= 'z') || (input[i] >= 'A' && input[i] <= 'Z') ||
input[i] == '\0'))

        {

            for (j = i; input[j] != '\0'; ++j)

            {

                input[j] = input[j + 1];

            }

            input[j] = '\0';

        }

  }

  puts(input);

  return 0;

}
```

Q.6. Number palindrome pattern

To print palindrome pyramid pattern using numbers is discussed here. Given a number n, the task is to print a palindrome pyramid containing n number of rows.

Sample Input 1
5

Sample Output 1
1

121

12321

1234321

123454321

#Solution

```
#include<stdio.h>

int main()

{

    int i, j, k, l, n;

    scanf("%d", &n);

    for (i = 1; i <= n; i++)
```

```
    {
        for (k = 1; k <= i; k++)
        {
            printf("%d",k);
        }
        for (l = i - 1; l >= 1; l--)
        {
            printf("%d",l);
        }
        printf("\n");
    }
    return 0;
}
```