Content T. List

L-1

24-09-23
CT-5
count 3 out of 5
assignment 2/3

Exam

① Output ② code connection
③ WAP
④ manual tracing
⑤ Identifine

③

```
int a = 0, b = 100;
for(i=0; i<5 ; i++)
{ if( i%2==0) {
    a++
  }
  else {
    b--;
  }
}
```

i<5	i	a	b	i%2==0
—	-	0	100	—
true	0	1	100	true
true	1	1	99	False
true	2	2	99	true
true	3	2	98	False
true	4	3	98	true
false	5	3	98	false

output

⑤ Identifine

$ - doller sign

7|17|2
14
3

* value

int a = 15

float b = 3.000000

float c = 3.[redacted]00000

int d = (a>b) && c

= 15>3.00 true

3.00000 true

= true && true

= true

= 1.

a=10; b=20, c=25

* (a<c) || b++ || (c-25)

1 || 1 || 0

= 1.

27-09-2023
L-2

#Error Correction,

```
#include <stdio.h>
int
void main() {
int num1 = 5;
float num2;
char chr = 'a';
scanf("%f", &num2);

printf("Result is = %d", num1);
```

num1 = num2 % chr

num1 = (int) num2 % chr
typecast need

Precedence

- *, /, % → L to R

17 % 7 * 5
→

++a * ++b

a++ * b++
→

++ⓐ * ⓑ++ * ⓒ++ * ++ⓓ
4 1 2 3

output

123.125	123
-150	-150.000
-150	-1.000000
-150	1.500000
-150	-1150000

a%=b

a = a%b

Increment/decrement :

a++ ① Incre
② assign

যার আগে থাকবে তাকে assign
then, increment/decrement

b = a++ (Post → আগে assign)

b = a
a = a+1

a = 4
b = 4
a = 5

b = ++a (Pref →

a = a+1
b = a

5 1001 2
10
0

int i = 10;
i = i+1
printf ("%d", i) 11
i = i%5 1
Printf (%d" i) 1
Printf (%d' i++) 1
Printf ('%d' ++i) 3
Printf ("%d', i) 3

i++ (+1)

a=1
b=2 ++a * a++ * ++b * b++

3 * 1 * 4 * 2 = 24

x = a++
= 2
2 = ++a
= 3

y = b++
= 3
x = 4

L-3 /10/1/2023

Post ⇒ L to R
Pre ⇒ R to L

a=1, b=2

++a * a++ * ++b * b--
2 3 1 2 2

x = a++ → 2
y = b-- → 1
P = ++a → 3
z = ++b → 2

x = 1/0+1=2
y = 2/b-- = 1

++a * x * ++b * y
3 * 1 * 2 / 2

(a++) - (++a) * (++c * b--)
11 29
x y
a=10, c=20, b=30

10 - (++10) * (++c * 30)

10 - 12 * (21 * 30)

= 10 - 12 * 630

= 10 - 7560

= 7550

a=11
b=29
10 - (++a) * (++c * 30)
10 - 12 * 21 * 30
= 10 - 12 * 630
= 10 - 7560
= 7550

Conditional statment:

Every positive value is true
'0' is false

bool → #include <stdbool.h>

up/low/digi → #include <ctype.h>

nested if

Switch

CT-1 — 08/10/2023 (Switch)

<u>Output</u>

i=7, j=2

① sum = ++i * j-- ← 1

= 8×2

= 16

print — 16, 8, 1

(ii) num = 1, 3

i = 10, j = 5

sum = 2 * 10 ← 11

= 20

i = 11

j = 6

sum = 2 * 6

= 12

j = 5

i = 12 print (12, 5, 12)

~~sum~~ ·

* break condition থাকলে আবার শুরু থেকে শুরু হবে। switch থেকে বের হয়ে যাবে.

* break না থাকলে always latest value গুলো নিয়ে কাজ করবে।

(3) →

sum = ++i * j--

= 11 * 5

= 55

sum = i++ * j--

= 49

j = 3

<u>default</u>

print — (0,0,0)

\# write code using if else

```
int main()
    int num = 3, sum = 10, i = 7, j = 2
    if(~~num==1~~)|||
        ~~return~~;
    }

if (num==1 || num == 2){
        sum = sum + --j * 2;
        i -  sum = ++i*j--;
}
else if(num == 3){
        sum = ++i * j--;
        break;
}
else if(num == 4){
        sum* = i++ / j--;
}       i = i % j;
else
        break;
```

if else to switch

100 টাকায় 40% discount দিবে
কত?
100 * 0.4

```
switch( n>a) {

case 1:

case1 : switch (n-a>5) {

        case 1 : Printf (" ")
                 Break;

case 0/ default : Print (" less than");

    } Break;

case 0:/ default :

        print (" give longe value;");

        Break;

}
```

"output — CT
if/else
statment
increment/decrement
"

Conditional statment

condition ? statment (T) : statment (F)

(a>b)? printf ("%d",a) : printf ("%d", b)

(a,b,c) → (a>b)? (a>c) ? printf ("%d",a): printf ("%d", b)

(b>c) ? printf ("%d", b);

#

getchar() → scan

getline() → scan

putchar() → print

Loop

single

nested

CT-1 * code connection

* validation che·
* output
* statment

Summer-22

Q1 - #include<stdio.h>

```
void main(){
int num1=5; float num2; char chr='9';
scanf("%f",&num2);
num1 = (int) num2 % chr;
printf("Result is = %d", num1);
}
```

(b) valid,
smallest-val → invalid. because of hyphen
while → vinvalid because of loop
2ndNum → invalid because of number is in the first.
!New → invalid because of conditional statment.
avg mark → invalid beemse of spaee betn two variable.
valid.

(c) float a = 5*(5/2) = 10.000000
int b = 5*(5/2) = 10
float c = 5*(5.0/2) = 12.500000

int d = 5*(5.0/2)
= 12

Qn-2

(a)

int sum=0, i=10, j=5

n=1

1 sum = 2*i++ (i=11)

= 2*10

= 20

j=6

2 sum = 2*j-- (j=5)

= 2*6

= 12

i=12

Print = 12 5 12

n=3

3 sum = 11*5

= 55

j=4

4 sum = 11*4

= 44

j=3

i=12

d sum=0, i=0, j=0

print = 0,0,0

Fall-22

Q1 a) #include <stdio.h>

```
int main() {
  int a, b;
  float sum;
  scanf("%d", &a);
   b = 10;
  sum = a+b
  printf("%f", sum);
  return;
}
```

पूर्णांक

(b) valid

switch → invalid cz library function

calculate sum → " " space betn _ _

valid

valid

calculate-sum → invalid cz hyphen

1st_sum → " " number at first

17%7

7|17|2
14
3 * 5
= 15

(c) int a = 17%7*5
= 15

float b = (int)(17.0/5)
= (int) 3.4
= 3.000000

float c = 17/5
= 3.000000

int d = (a>b) ? a : c
= 15 > 3.000.. true
c = 3.000000 true
true && true
= 1.

Q2 ⓐ int num = 3, sum = 10, i = 7, j = 2;

num = 1 → sum = sum + --j * 2

= 10 + 1 * 2

= 12

j = 1

i = 6

~~Sum = sum + i++ * j--~~

~~= 12 * 6 / 1~~

~~= 72~~

~~= 12 + 7*~~

/ i = 7
j = 0

sum = ++i * j--;

= 7 * 1

= 7

| i = 7
| j = 0

print (7, 7, 0) A.

num = 3 → sum = ++i * j--

= 8 * 2

= 16

| i = 8
| j = 1

print (16, 8, 1). B.

(b)

```
#include<stdio.h>
int main() {
    int num = 3, sum = 10, i = 7, j = 2;

if ( num == 1 || num == 2) {
    sum += --j * 2;
    i--;
}
else if ( num == 3) {
    sum = ++i * j--;
    break;
}
else if (num == 4) {
    sum *= i++/j--;
    i = i % j;
    break;
}
else
    { printf ("Tata");
    }
printf ("%d, %d %d ", sum, i, j);
return 0;
}
```

CT-2

09-10-2023

While

```
while (n!=0) {
    printf("%d", num%10);
    num/=10;
```

```
int i=0;
While(condition) {
    // statment;
    i++;
}
```

Conversion

```
for(int i=0; num!=0; i++)
```

```
for(; num!=0; )
```

while to for

do while

① অন্তত statment, যাহা condition

```
for(i=0; i<5; i++)
    do {
    } while(i<5)
```

```
int i=0
do do {
    printf("%d", i); int j=0
    do { printf("%d", j)
    j++ } while(i<4);
    i++; }
    while(i<5);
```

```
# for(i=0; i<5; i++) {
    printf("%d", i);
    for(j=0; j<4; j++) {
        printf("%d", j);
    }
    printf("\n");
}
```

```
int i=0
do while(i<5) { printf("%d ", i); i++;
    int j=0;
    while(j<5)
    {
        printf("%d", j);
        j++;
    }
    printf("\n");
    i++;
}
```

```
int i=0
do{ printf(
    do{ printf(
        j++;
    }while(i<4);
i++ }while(i<5);
    print( )
}
```

```
while(i<5){
printf(...);
  int j=0;
  do{
    printf("ㅋㅋ
    j++}
  while(j<4);
  print( );
  i++};
```

sum = 24 j=5
i--*j--++i
3*6+4 i=2
24 j=5

```
int i=1
# do{
    printf("week: %d \n", i); int j=1
  do{ if(i%2==0){
      if(j%2==0)
        printf( --- );
      else{
          if(j%2!=0)
            printf( ) }j++}while(j<=day);
i++ }while(i<=weeks);
}
```

sum = 2*5
=15 i=1
j=4

sum = sum*i++/j--
= 15*1/4
= 0 i=2
j=3

sum = 12+3/7

break statement

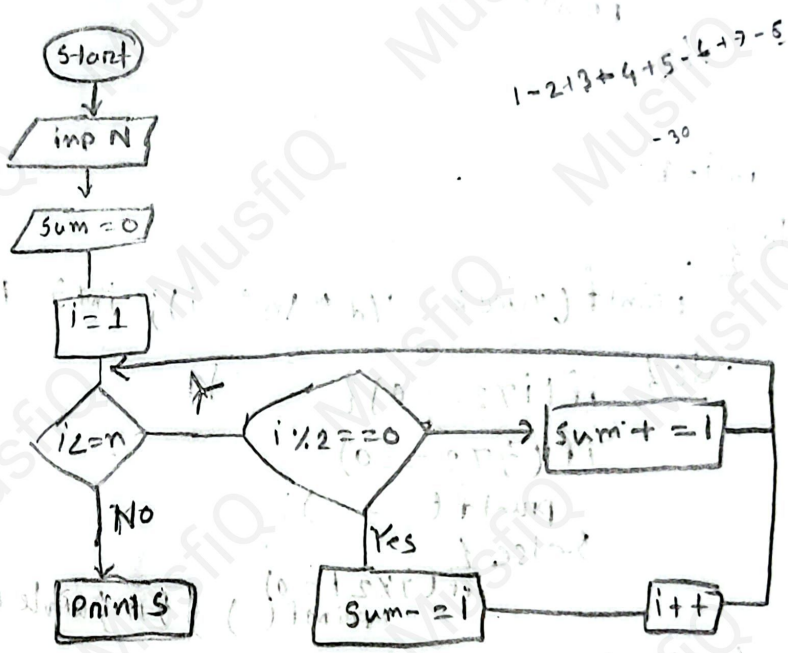
break ;
continue ;

```
while(i<=5){
    break;
    i++
}
```

```
while(n>0){
    if(n==0)
        continue;
}
```

Flowchart

1-2+3-4+ ... +n



$1^3+2^3+3^3+\dots$

$1+8+27+\dots$

1 + 11 + 111 + 1111 + ...

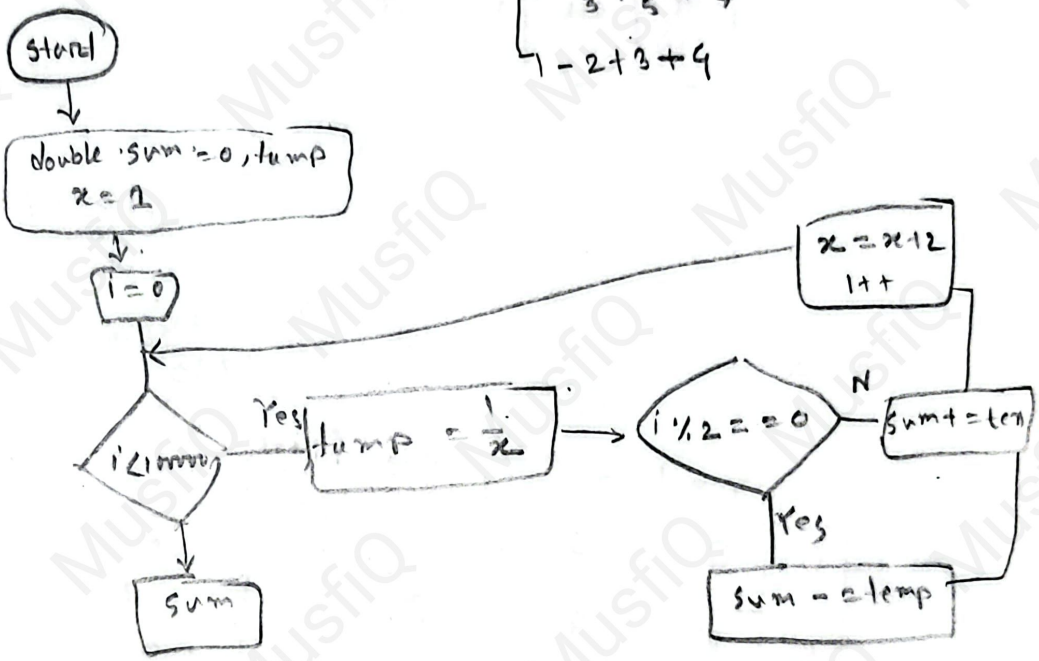
```
int sum = 0, temp = 2;
for(i=0; i<n; i++) {
    printf("%d", temp);
    if(i<n-1) {
        print("+");
    }
    sum = sum + temp;
    temp = temp * 10 + 2;
```

Series

- 1+2+3+4+5+...
- 1+4+7+10+...
- 1+11+111+...
- $1^2+2^2+3^2+4^2+5^2$...
- $\frac{1}{1^2}+\frac{1}{2^2}+\frac{1}{3^2}$ ....
- $\frac{1}{1}+\frac{1}{4}+\frac{1}{9}$ ....
- $1+\frac{1}{8}+\frac{1}{27}+\frac{1}{64}+\frac{1}{512}$
- $1-\frac{1}{3}+\frac{1}{5}+\frac{1}{7}$
- 1-2+3+4

#

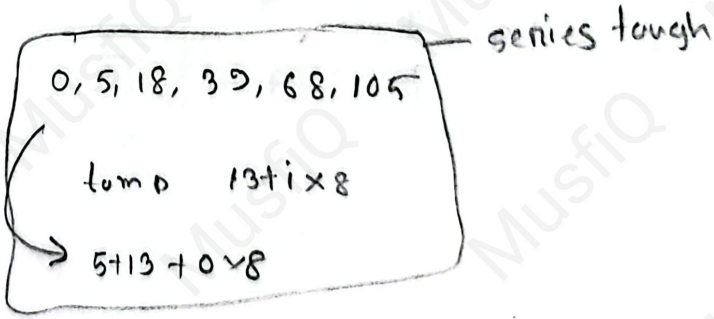
$1-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\frac{1}{9}$ ...



CT-1

Loop, Flow chart

Series + manual tress



15-10-23

manual tress

i	sum	b	a	y	x
gon	0	gon	1	1	1
1	1	7	8	2	3
2	9	19	27	3	6
3	36	37	64	4	10
4	100	61	125	5	15
5	225	91	216	6	21
6	-	-	-	-	-

```
int sum=0,i=a=1,x=1,y=1
for(i=1;i<=5;i++)
{
  sum=sum+a;
  b=6*x+1;
  a=a+b;
  y++;
  x=x+y;
}
```

66|334|5
330
4

7|1334|190
1330
(4)

66

n=4

i	i<=n	n_fi	value_fi++i
0	0	4	0	-
0	T	4	0	1
2	T	4	4	3
4	T	4	20	5
6	F	4	5	-
4				

value+i*i
0+0*0
=0

1+4=5

5+9=14

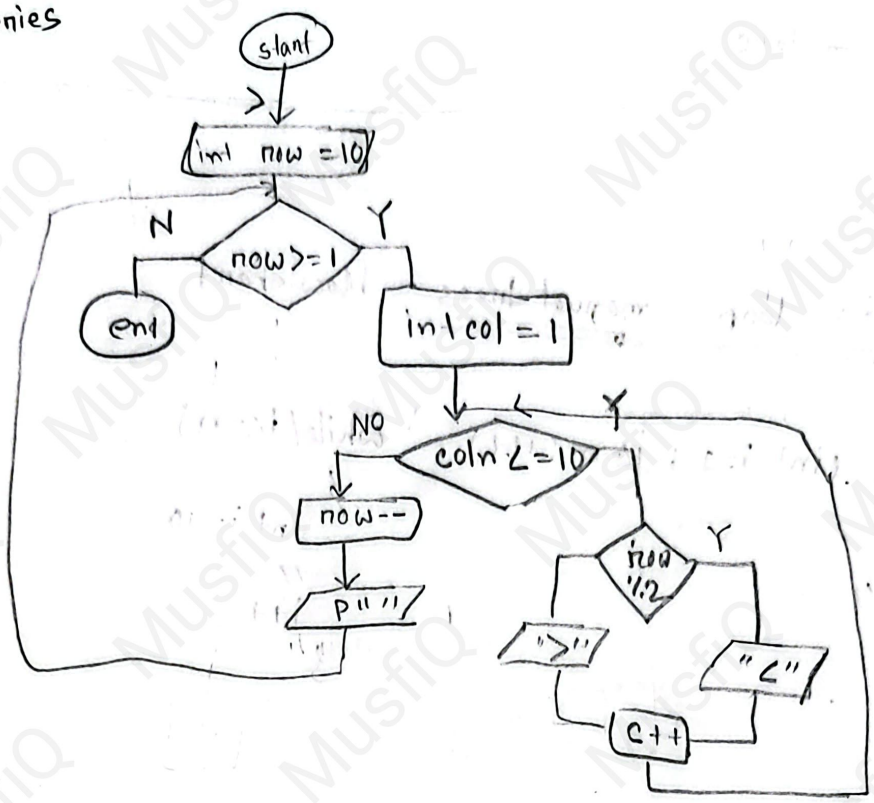
14+16=30

4+4*4=20

i=3
i=

3|1334|444
1332
2 11

Flow chart + Series



$1+11+111+1111+\cdots$

```
int sum = 0;
int temp = 1;
for(i=0 ; i<n ; i++)
 { print(temp);
   if (i<n-1)
     { print("+");
     }
   sum = sum + temp;
   temp = temp*10 +1;
 }
```

$1+\frac{1}{8}+\frac{1}{27}+\frac{1}{64}+\frac{1}{1512}$

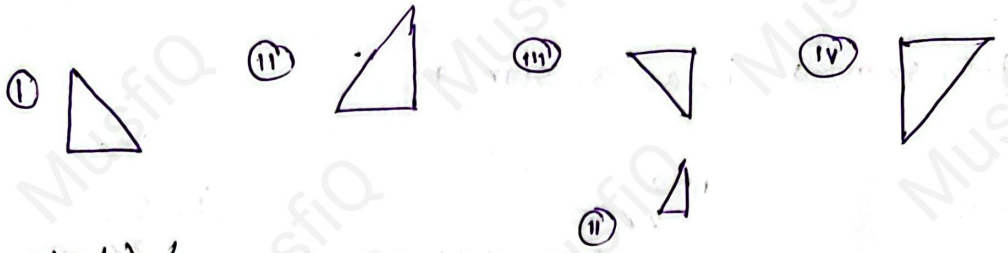
$temp = \frac{1}{x}$

$x = 1$

$1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} \cdots$

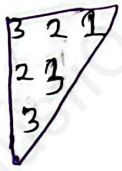
```
int sum = 0 ;
 int temp ;
 int x=1; int n=10000;
 for(i=0;i<n ;i++) {
   temp = 1/x ;
 if(i%2 == 0)
   { sum = sum - temp ;
   }
  else {
     sum = sum + temp
   }
   x = x+2 ;
```

Patern



① int main () {
int i, j, n
for(i=1 ; i<=n ; i++){
for(j=1 ; j<=i ; j++){
printf("%d ", j);
}
printf("\n");
}

```
int main()
for int i, j, n;
for(i=1; i<=n; i++){
  for(j=i ; j<n ; j++)
   {printf(" ");
   }
  for(j=1; j<=i ; j++){
   {printf("%d ", j);
   }
  printf("\n");
}
```




```
int main()
 int i, j, n;
 for(i=1; i<=n; i++){
   for(j=i ; j<n; j++)
    {print(j)
    }
   print("\n");
}
for(i=n ; i>=1 ; i--){
  for(j=1; j<=i ; i++){
     printf(j)
  }
  printf(\n).
}
```

X

```
for(i=1; i<=n; i++) {
  for(j=1; j<=n; i++) {
    if(i==j || j==n-i+1) {
      printf("*");
    }else
        printf(" ");
    }
  printf("\n");
}
```

T

`if(i==1 || j==(n/2+1))`

N

`if(j==1 || j==n || i==j)`

H

`if(j==1 || j==n || i==n/2+1)`

Y

`if((i>=n/2+1 && j==n/2+1) || (j<n/2+1 && (i==j || j==n-i+1)))`

mid syllabus ↓

① Error connection, semantic error

② identifine → valid / invalid
i, no digit at first
ii, no special character, except "_"
iii, no keyword
int x int ↵

③ Operator
① precedene + asociativity
② output

x = 6, y = 7

int a = 12 * 5 / x++ * y-- && (x>5) (1st)

= 60 / 6 * 7 && T

= 10 * 7 && T

= 70 && T

= T && T

= 1 — if float then, 1.00...

n = x++
m = y--
Post the pre

#int a = x++ * --y * y++ * ++x
(1) (4) (2) (3)

= 6 * --y * 7 * ++x
4 3

= 6 * 7 * 7 * 8

= 42 * 56

④ Condition
① conversion
② Output
① if — independent (True হলে next condition chk করবে না)
② else if
③ else
④ switch
⑤ Conversion

```
if(a>5) {
  //
  if(c<5) {
  //
  }
}
```

→

```
switch( ) {
case 1:
case 2:
  :
```

⑤ Loop
① for
② while
③ do while
① conversion
② Output + manual tress

⑥ Annay
① WAP → aggregate function
② manual trassing

⑦ Patern
→ Δ Δ M
∇ ∇ → X, Y, M, N, T, I (if condition handle)

⑧ 2D Annay
① manual trass

⑨ Flowchart
① senies