SPL Theory

Fall-2019

(1)

(a)

Stdio.h → stdio.h

Int → int

Scanf → scanf

b → &b

%f → %d

Div → div

Printf → printf

Return → return

(b)

Valid	Invalid
Sum_val	Sum val → space are not allowed
Sum9 Val	9Sumval → num are not allowed at first
$Sumval	sum val → space are not allowed

Invalid cause variable can't contain $

(2)

(c)

a = 19

b = 19

c = 19.500000

↳ as float

d = 19.000000

e = 3

f = 4.000000

(2)

(a)

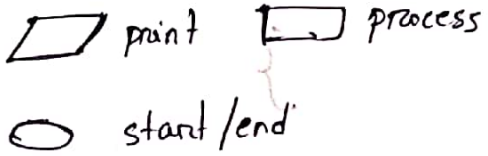
b = 4	b = 5	b = 10	b = 12
Start	Start	Start	Start
Hello	Hello	World	World
Stop	Stop	Stop	Stop

(b)

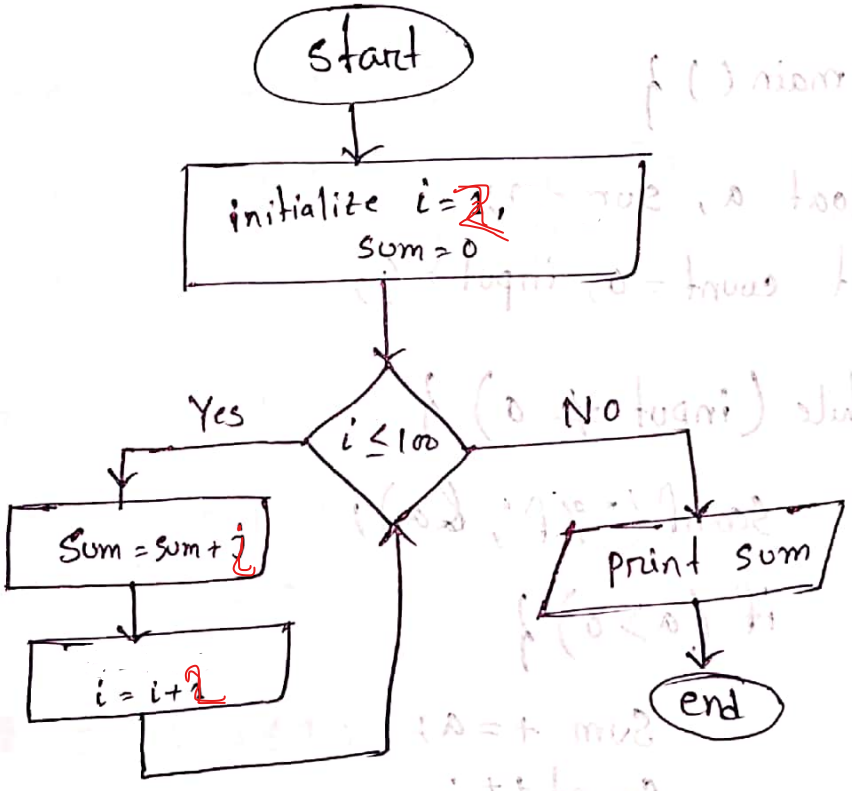
```
#include <stdio.h>

int main() {

    int choice;

    switch (choice) {

        Case 1:
            printf("CSE \n");
            break;

        Case 2:
            printf("CSE \n");
            break;
```

```
case 3:
    printf("UIU\n");
    break;

default:
    printf("Bye");
    break;

return 0;
}
```

first print then ++ --



3 a



(4)

```
#include <stdio.h>
void main()
{
    int sum = 0;
    for (int i = 2; i <= 100; i += 2)
    {
        sum += i;
    }
    printf("%d ", sum);
}
```

```
#include <stdio.h>
void main() {
    int sum = 0;
    for(int i=1, j=2; i<=100; i++, j+=2) {
        sum += j;
    }
    printf("%d", sum);
}
```

(6)

```
#include <stdio.h>
void main() {
    float a, sum = 0;
    int count = 0, input = 4;
    while (input ≠ 0) {
        scanf("%f", &a);
        if (a > 0) {
            sum += a;
            count++;
            input--;
        }
```

```
else {
    printf("Enter positive value");
  }
}

float ans = sum/count;
printf("%f", ans);
}
```

4

a

$i=3;\ j=1;\ j\le 3;\ j++$

$j=1 \longrightarrow 2\cdot1+1=3$
$j=2 \longrightarrow 2\cdot2+1=5$
$j=3 \longrightarrow 2\cdot3+1=7$
} 357 → output

$i=2;\ j=1;\ j\le 2;\ j++$

$j=1 \longrightarrow 2\cdot1+1=3$
$j=2 \longrightarrow 2\cdot2+1=5$
} 35

$i=1;\ j=1;\ j\le 1;\ j++$

$j=1 \longrightarrow 2\cdot1+1=3$ } 3

(6)

final ans → 3 5 7

3 5

3

(5)

```
#include <stdio.h>

void main() {

    int arr[500], n;

    scanf("%d", &n);

    for(int i=0; i<=n-1; i++) {

        scanf("%d", &arr[i]);

    }

    int sum=0;

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

        if (i%2 ≠0) {

            sum += arr[i];

        }

    }

    printf("%d", sum);

}
```

5

a) char str1[7] = {'\0'}; str1 empty string

char str2[7] = {'0'}; string of '0' char

strcpy (str1, "CSE"); Copy "CSE" into str1

strcpy (str2, "VIU"); " "VIU" " str2

strcat (str2, str1); "VIUCSE" = str2

strrev (str2); "ESCUIU"

puts (str2); print ESCUIU

print ("\n");

puts (str1); "CSE"

int i = strlen (str2); str2 length = 6

printf ("\n The length of %s is = %d", str2, i);

ESCUIU

CSE

The length of ESCUIU is = 6

(8)

(b)

i → ith row

n → Array size

```
#include <stdio.h>

void main() {
    int n, i;
    scanf("%d %d", &n, &i);
    int A[n][n];

    for (int r=0; r<n; r++) {
        for (int c=0; c<n; c++) {
            scanf("%d", &A[r][c]);
        }
    }

    int max = A[i][0];
    ~~for (int r=0; r<n; r++)~~
        for (int c=0; c<n; c++) {
            if (A[i][c] > max) {
                max = A[i][c];
            }
        }
}
```

```
print ("%d", max);
}
```

Fall - 2020

1

a

int a = 42 % 5 = 2

int b = 42 / 5 = 8

float c = 42/5 = 8.000000

float d = (float) 42/5 = 8.400000

float e = a * b - d/c

= 16 - 1.05 = 14.950000

b

a = 42;

b = 42 + 10 = 52;

c = 42 + 20 = 62;

(i) choice = 42

BEGIN

NICE

END

(10)

(ii) choice = 42 + 11 = 53

BEGIN
CSE
END

(iii) choice = 42 + 21 = 63

BEGIN
NICE
END

(2)

(a)

a = 42 % 2 + 3 = 3

b = 42 % 2 + 2 = 2

c = 42 % 2 + 4 = 4

START

6 4 12

4 4 7

STOP

(b)

```
#include <stdio.h>

void main() {

    int a = 42;

    int b = 5;

    a++;

    b--;
```

```
if (a < b) {
    printf ("Division not possible");
}
else {
    if (a % b == 0) {
        int quotient = a/b;
        printf ("%d %d %d", a, b, quotient);
    }
    else {
        int quotient = a/b;
        int remainder = a%b;
        printf ("%d %d %d %d", a, b, quotient, remaind);
    }
}
}
```

③ (12)

ⓐ

$n = 42$

$i = 40$

step 1

$40 \le 42$

sum = 0 + 40 = 40

print → 40 40

step 2

$41 \le 42$

sum = 40 + 41 = 81

print → 41 81

step 3

$42 \le 42$

sum = 81 + 42 = 123

print → 42 123

step 4:

$43 > 42$

print → 43 123

40	40
41	81
42	123
43	123

ⓑ

```
#include <stdio.h>
void main ()
{
    int a = 42;
    int i = 4;
    int sum = 0;

    for (int j=0; j<= 10; j++)
    {
        sum += a + j*i;
    }
    printf ("%d", sum);
}
```

4

a

A [0] = 43;

A [1] = 44;

A [2] = 45;

A [3] = 46;

step1

i = 3 ; i ≥ 0

46 % 2 == 0

print → A [3] = 46

step2

i = 2 ; i ≥ 0

45 % 2 != 0

step3

i = 1 ; i ≥ 0

44 % 2 == 0

print → A [1] = 44

step4

i = 0 ; i ≥ 0

43 % 2 != 0

step5

i = -1 ; i < 0

↳ सब खत्म

output

A [3] = 46

A [1] = 44

(14)

(b)

```
# include <stdio.h>
void main ( ) {
    int A[10];
    int a = 42;
    int i = 4;
    for (int j = 0; j ≤ 9 ; j++) {
        A[j] = a + j * i ;
    }

    for (int j = 9 ; j ≥ 0 ; j--) {
        printf ("%d ", A[j]);
    }
}
```

Fall-2021

1

(a)

```
#include <stdio.h>

int main(){
    int a, b;
    float sum;
    scanf("%d %d", &a, &b);
    sum = a+b;
    printf("%f", sum);
    return 0;
}
```

(b)

$x = 3$	$x = 10$	$x = 17$	$x = 21$
Morning Hello	Invalid answer.	Best	Wishes! Invalid answers

(16)

(c)

```
# include <stdio.h>

void main() {

    int A, B;

    Scanf("%d %d", &A, &B);

    if (A == B) {

        printf(" Draw!");

    }

    else if (A > B) {

        printf(" Team A wins");

    }

    else {

        print(" Team B wins");

    }

}
```

2

a

step1

$i = 10;\ j = 1;\ i > 0$

$Sum = 0 + (10 - 1) = 9$

step 2

$i = 12;\ i > 0;\ j = 2$

$sum = 9 + (12 - 2) = 19$

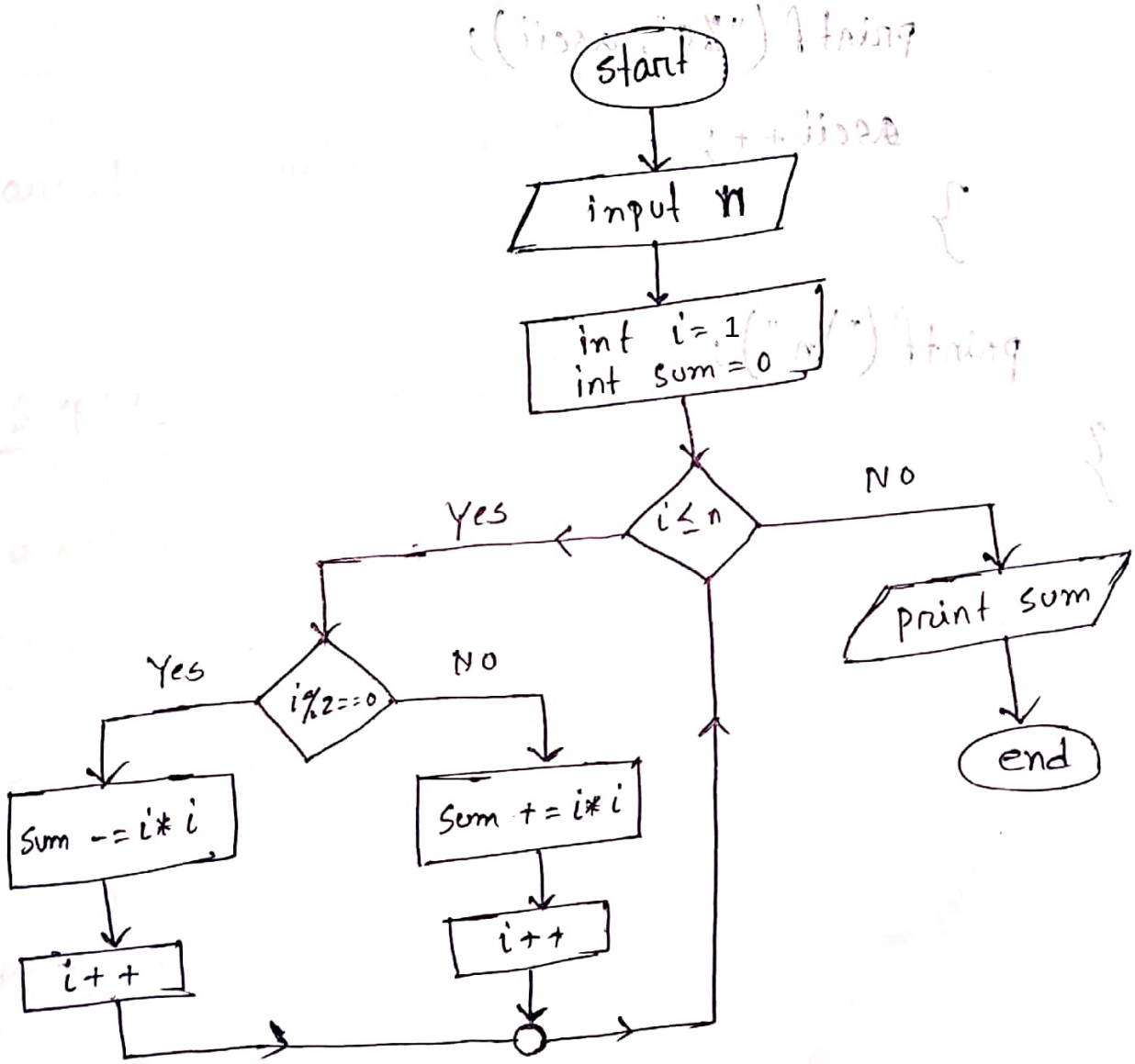
step3

$i = 14;\ i > 0;\ j = 3$

$Sum = 19 + (14 - 3) = 30$

here $i += 2$ and $i > 0$ is true for every value of i so this loop run infinite time

b



(18)

(c)

```
#include <stdio.h>
void main ()
{
    int n;
    scanf ("%d", &n);
    for (int i = 1; i ≤ n; i++)
    {
        int ascii = 65;
        for (int j = 1; j ≤ n-i+1; j++)
        {
            printf ("%c", ascii);
            ascii++;
        }
        printf ("\n");
    }
}
```

03

a

step 1

$i = 0, j = 0$

$arr1[i] \neq arr2[j]$

step 2

$i = 0, j = 1$

$arr1[i] \neq arr2[j]$

step 3

$i = 0, i = 2$

$arr1[i] \neq arr2[j]$

step 4

$i = 0, j = 3$

$arr1[i] \neq arr2[j]$

step 5

$i = 0, j = 4$

$arr1[i] == arr2[j]$

$n = 1$

$m = 1$

$arr3[0] = 1$

step 6

$i = 1, j = 0$

$arr1[i] \neq arr2[j]$

step 7

$i = 1, j = 1$

$arr1[i] \neq arr2[j]$

step 8

$i = 1, j = 2$

$arr1[i] \neq arr2[j]$

step 9

$i = 1, j = 3$

$arr[i] == arr2[j]$

$n = 2$

$m = 2$

$arr3[1] = 2$

step 10

$i = 1, j = 4$

$arr1[i] \neq arr2[j]$

step 11

$i = 2, j = 0$

$arr1[i] \neq arr2[j]$

step 12

$i = 2, j = 1$

$arr1[i] \neq arr2[j]$

step 13

$i = 2, j = 2$

$arr1[i] == arr2[j]$

$n = 3$

$m = 3$

$arr3[2] = 3$

step 14

$i = 2, j = 3$

$arr1[i] \neq arr2[j]$

step 15

$i = 2, j = 4$

$arr1[i] \neq arr2[j]$

(20)

step16

$i=3, j=0$

$arr1[i] \neq arr2[j]$

step17

$i=3, j=1$

$arr1[i] = arr2[j]$

$n=4$

$m=4$

$arr3[3]=4$

step18

$i=3, j=2$

$arr1[i] \neq arr2[j]$

step19

$i=3, j=3$

$arr1[i] \neq arr2[j]$

step20

$i=3, j=4$

$arr1[i] \neq arr2[j]$

step21

$i=4, j=0$

$arr1[i] = arr2[j]$

$n=5$

$m=5$

$arr3[4]=5$

step22

$i=4, j=1$

$arr1[i] \neq arr2[j]$

step23

$i=4, j=2$

$arr1[i] \neq arr2[j]$

step24

$i=4, j=3$

$arr1[i] \neq arr2[j]$

step25

$i=4, j=4$

$arr1[i] \neq arr2[j]$

(ii)

1 :

2 :

3 :

4 :

5 :

5 :

4 :

3 :

2 :

1 :

(b)
```
#include <stdio.h>
void main(){
    int partho[50];

    for (int i=0; i<50; i++){
        scanf("%d", &partho[i]);
    }

    int min = partho[0]
    int index = 0;

    for (int j=0; j<50; j++){
        if (partho[j] < min){
            min = partho[j];
            index = j;
        }
    }

    printf("%d \n", min);
    printf("%d ", index);
}
```

22

Sample Midterm

1

a

```
#include <stdio.h>
int main() {
    int a, b;
    float div;
    scanf ("%d %d", &a, &b);
    div = a/b;
    printf ("%f", div);
    return 0;
}
```

b

- 1 → integer
- 1.0 → float
- '1' → char
- "1" → string
- 1 → int

21

a/ b = 14

c

```
int a = 2;
int b = 3;
float c = 3.000000;
float d = 3.400000
int e = 12;
```

2

a

b = 4	b = 5	b = 10	b = 12
Begin	Begin	Begin	Begin
CSE	CSE UIU	UIU	UIU
End	End	End	End

b

```
#include <stdio.h>

int main(){
    int choice;
    scanf("%d", &choice);

  if (choice == 1) {
        printf("CSE \n");
        printf("VIU \n");
    }
  else if (choice == 2) {
        printf("VIU \n");
    }
  else if (choice == 3) {
        printf("BYE");
    }
```

```
else {
    printf (" EXIT ");
}

return 0;
}
```

3

a

step 1

$i = 2;\ i \le 6$

sum = 0 + 2 = 2

print → 2 2

sign = -1

step 2

$i = 4;\ i \le 6$

sum = 2 - 4 = -2

print → 4 -2

sign = 1

step 3

$i = 6;\ i \le 6$

sum = -2 + 6 = 4

print → 6 4

sign = -1

step 4

$i = 8;\ i > 6$

output

2 2

4 -2

6 4

4 → sum

(b)

```
#include <stdio.h>
void main() {
    int n;
    scanf("%d", &n);
    float sum = 0;
    while (n ≠ 0) {
        float input;
        scanf("%f", &input);
        if (input ≥ 0) {
            sum += input;
            n--;
        }
        else {
            continue;
        }
    }
    printf("%f", sum);
}
```

(26)

(4)

(a)

step1

$i = 2;\ i \geq 1$

$j = 1;\ j \leq i$

print → 2 1

step2

$i = 2;\ i \geq 1$

$j = 2;\ j \leq i$

print → 2 2

step3

$i = 2;\ i \geq 1$

$j = 3;\ j > i$

print → 2 3

step4

$i = 1;\ i \geq 1$

$j = 1;\ j \leq i$

print → 1 1

step5

$i = 1;\ i \geq 1$

$j = 2;\ j > i$

print → 1 2

step6

$i = 0;\ i < 1$

print → 0 2

output

2	1
2	2
2	3
1	1
1	2
0	2

(b)

```
#inelude <stdio.h>
void main ( ) {
    int arr [100] , n;
    scanf ("%d", &n);
    for (int i=0; i<n; i++) {
        scanf ("%d", &arr[i]);
    }
```

```
int min = arr[0];
~~int index = 0;~~

for (int j=0; j<n; j++) {
    if (arr[j] < min) {
        min = arr[j];
        ~~index = j;~~
    }
}

printf("%d", min);
~~printf("\n%d", index);~~
}

for (int k=0; k<n; k++) {
    if (arr[k] == min) {
        printf("%d ", k);
    }
}
}
```

10, 4, 20, 4

output

1 3

28

5

a

step 1

$i = 2;\ i \le 5$

$F[2] = F[1] + F[0]$

$= 1 + 1 = 2$

print → 1 1 2

step 2

$i = 3;\ i \le 5$

$F[3] = F[2] + F[1]$

$= 2 + 1 = 3$

print → 1 2 3

step 3

$i = 4;\ i \le 5$

$F[4] = F[3] + F[2]$

$= 3 + 2 = 5$

print → 2 3 5

step 4

$i = 5;\ i \le 5$

$F[5] = F[4] + F[3]$

$= 5 + 3 = 8$

print → 3 5 8

step 5

$i = 6;\ i > 5$

print → $F[4]$, $F[5]$, $F[4] + F[5]$

5 8 13

output

1	1	2
1	2	3
2	3	5
3	5	8
5	8	13

(b)

```
#include <stdio.h>
void main () {
    int A[n] [n], n;
    scanf ("%d", &n);
int sum = 0;
for (int i=0; i<n; i++) {
    for (int j=0; j<n; j++) {
        scanf ("%d", &A[i] [j]);
        sum += A[i] [j];
    }
}

for (int i=0; i<n; i++) {
    for (int j = 0; j <n; j++) {
        if (A[i] [j] % 2 == 0) {
            printf ("%d ", A[i] [j]);
        }
    }
}
print ("%d", sum);
}
```

→ even number

(30).

Summer-2021

(1)

(a)

int a = 42 / 7 = 6;

int b = 42 % 7 = 0;

float c = (float) 42/7 = 6.000000;

float d = float (42/7) = 6.000000;

int e = (a-b) < 0 && c == 0 (false)

(2)

int n = 42 % 66 = 42;

step 1

i = 38 ; i ≤ n

final = 0 + (38 * 38) = 1444

i = 39

step 2

i = 40 ; i ≤ n

final = 1444 + (40 * 40) = 3044

i = 41

step 3

i = 42 ; i ≤ n

final = 3044 + (42 * 42) = 4808

i = 43

step 4

i = 44 ; i > n

ঢুকলাকুলো

এখানেই শেষ ম্যাস

③

int a = 2042 % 3 + 1 = 3

int b = 2042 % 2 + 1 = 1

int c = 2042 % 3 + 2 = 4

step1

i=0; i<8

Case 0

i = 0 + 3 = 3

step 2

i=4; i<8

Case 4

i = 4 + b

= 4 + 1 = 5

step3

i=6; i<8

default

i = 6 + 4 = 10

step4

i=11; i>8

স্যাম

④

int n = 2042;

step 1

i=0; i<4

A[0] = 2042 + 0

= 2042

A[0] % 2 == 0

step 2

i=1; i<4

A[1] = 2042 + 1

= 2043

A[1] % 2 != 0

A[1] = 2043 * 2

= 4086

step3

i=2; i<4

A[2] = 2042 + 2

= 2044

A[2] % 2 == 0

(32)

step3

$i=3;\ i<4$

$A[3] = 2042+3$

$= 2045$

$A[3] \% 2 != 0$

$A[3] = 2045 * 2$

$= 4090.$

step 4

$i=4;\ i \le 4$

मुश्किल

int A[4] = {2042, 4086, 2044, 4090};

(5)

(a) int a = 042+3 = 45;

(b) int b = a+11;

(c) ~~int~~ b = b/15;

(d) float c = a+b;

(e) c++;

(f) printf("%d %d %d", a, b, c);

```
#include <stdio.h>
Void main() {
    int a = 45;
    int b = a+11;
    b = b/15;
```

```
float c = a+b;
c++;
printf("%d %d %d", a, b, c);
}
```

6

```
#include <stdio.h>
void main() {
    int a = 42 % 17 + 3 = 11;
    int b = 42 % 21 + 5 = 5;
    int c;
    scanf ("%d", c);
    if (c > a && c > b) {
        if (c % 2 == 0) {
            printf("c is the largest and even");
        }
        else {
            printf("c is largest and odd");
        }
    }
```

(34)

```
if (c>a) {
    if (c%3==0) {
        printf ("c crossed a and divisible by 3");
    }
    else {
        printf ("c is not divisible by 3");
    }
}

if (c>b) {
    if (c%5==0) {
        printf ("c crossed b and divisible by 5");
    }
    else {
        printf ("c is divisible by 5");
    }
}
}
```

1

```
#include <stdio.h>
void main()
    int i, j, n;
    scanf("%d %d %d", &i, &j, &n);
    int sum ~~ans~~ = 0;
    for (int k = 0; k ≤ n; k++)
        sum += (k * i) + ((k-1) * j);
    }
    ~~printf("%d", sum~~
    if (sum % 2 == 0)
        printf("------042");
    }
    else
        printf("My name is John Cena");
    }
}
```

36

8

```
#include <stdio.h>
void main (){
    int A[10];
    int b = (42 % 21) + 5 - 5;
    int a = 2042;

  for (int i=0; i< 10; i++){
      A[i] = ((a % 7) + (3 * i));
  }

  int sum = 0;

  for (int j=0; j< 10; j++){
      if (A[j] % 2 == 0){
          sum += A[j];
      }
  }

  printf("%d", sum);
}
```

Summer 2022

1

a

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

b

Valid	Invalid
largest_val	Smallest-val → "-" are not allowed
val9	while → itself inbuilt func
	2nd Num → number at first are not allowed
	!New → ! are not allowed
	avg mark → space are not "

(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;

(2)

(a) num = 1, i = 10, j = 5

sum = 2 * 10 = 20 → i = 11, j = 6

sum = 2 * 6 = 12 → j = 5, i = 12

print → 12 5 12

num = 3

as their is no break so it will print default value

print → 0 0 0

6

step 1

$i=1;\ i \le 5;\ a=1;\ x=1;\ y=1$

$Sum = 0+1 = 1$

$b = (6*1)+1 = 7$

$a = 1+7 = 8$

$y = 2$

$x = 1+2 = 3$

~~Print~~

step 2

$i=2;\ i \le 5;\ sum = 1;\ a = 8;$

$x = 3;\ y = 2$

$Sum = 1+8 = 9$

$b = (6*3)+1 = 19$

$a = 8+19 = 27$

$y = 3$

$x = 3+3 = 6$

step 3

$i=3;\ i \le 5;\ sum = 9;\ a = 27;$

$x = 6;\ y = 3$

$Sum = 9+27 = 36$

$b = (6*6)+1 = 37$

$a = 27+37 = 64$

$y = 4$

$x = 6+4 = 10$

step 4

$i=4;\ i \le 5;\ sum = 36;\ a = 64;$

$x = 10;\ y = 4$

$Sum = 36+64 = 100$

$b = (6*10)+1 = 61$

$a = 64+61 = 125$

$y = 5$

$x = 10+5 = 15$

step 5

$i=5;\ i \le 5;\ Sum = 100;$

$a = 125;\ x = 15;\ y = 5$

$Sum = 100+125 = 225$

$b = (6*15)+1 = 91$

$a = 125+91 = 216$

$y = 6$

$x = 15+6 = 21$

(40)

(3)

(a)

```
#include <stdio.h>
void main() {
int n=3, sum=0; i, j
i=0;
do {
    j=0;
    do {
        if (i==j) sum += i+j;
        else if (i>j) sum += i+n;
        else sum += n-j;
        j++;
    }
    while (j≤i);
    i++;
}
while (i<n);
}
```

do-while

```
init
do {
    ++ --
}
while (condition);
```

(b)

```
#include <stdio.h>
void main() {
    float sum = 0;
    int count = 0;
  for (int i = 1; ; i++) {
    float input;
    scanf("%f", &input);
    if (input > 0) {
        sum += input;
        count++;
    }
    else if (input == 0) {
        break;
    }
  }
  float avg = sum / count;
  printf("%f", avg);
}
```

(42)

(4)

(a)

step 1

$i=0; i<6; n=3$

$F[0] = 3+0 = 3$

$F[0] \% 2 \neq 0$

$F[0] = 3$

step 2

$i=1; i<6; n=3$

$F[1] = 3+1 = 4$

$F[1] \% 2 == 0$

$F[1] = 4*2 = 8$

step 3

$i=2; i<6; n=3$

$F[2] = 3+2 = 5$

$F[2] \% 2 \neq 0$

$F[2] = 5$

step 4

$i=3; i<6; n=3$

$F[3] = 3+3 = 6$

$F[3] \% 2 == 0$

$F[3] = 6*2 = 12$

step 5

$i=4; i<6; n=3$

$F[4] = 3+4 = 7$

$F[4] \% 2 \neq 0$

$F[4] = 7$

step 6

$i=5; i<6; n=3$

$F[5] = 3+5 = 8$

$F[5] \% 2 == 0$

$F[5] = 8*2 = 16$

step 7

$i=6; i \leq 6$

↓

স্টপ

$\therefore$ int $F[6] = \{3, 8, 5, 12, 7, 16\}$

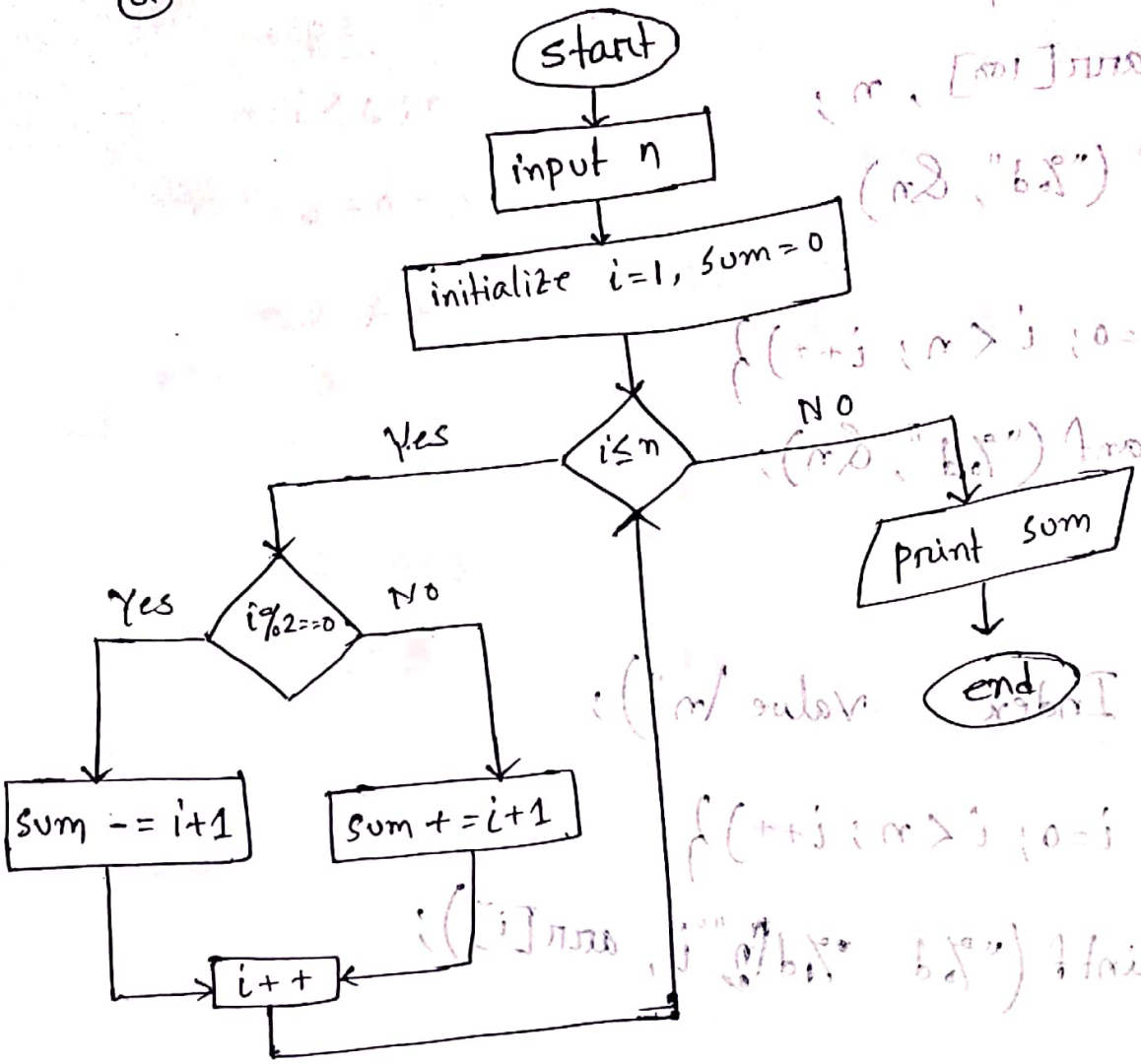
(b)

```
#include <stdio.h>
void main() {
    int arr[100], n;
    scanf ("%d", &n)

for (int i=0; i<n; i++) {
        scanf ("%d", &n);
    }

printf (" Index  value \n");
for (int i=0; i<n; i++) {
        printf ("%d  %d\n", i, arr[i]);
    }

int sum=0, count=0;
for (int i=0; i<n; i++) {
        if (i%2 ≠0) {
            sum += arr[i];
            count++;
        }
    }
float avg = (float) sum/count;
printf ("%f", avg);
}
```

44

5

a



b

```
#include <stdio.h>

Void main() {

    int n;
    scanf("%d", &n);

    int p= 2*n;
```

```
for (int i=1; i≤n; i++) {
    for (int j=1; j≤n-i+1; j++) {
        printf("%d ", p);
        p -= 2;
    }
    p = (2*n) - (2*i);
    printf("\n");
}
}
```

(46)

Spring - 22

(1)

(a)

```c
#include <stdio.h>
#include <math.h>
int main() {
    float n_, m=5;
    scanf("%f", &n_);
    float p = (n_ % m) / sqrt(6);
    printf("%f", p);
    return 0;
}
```

(b)

Valid	Invalid
_Num1	1time → number at first
~~num~~ 6	$value → $ not allow
first_name	"myValue" → " " not "
flx	last-name → - not "

(c) int a = 10.0/3 * 10 = 33 (3.33)

float b = (int)23.0 % 11 = 1.000000

int c = (10>9 && 21≤19) * 5 = 0

float a = 7/2 = 3.000000

(2)

(a)

b = 4	b = 5	b = 10	b = 12
Begin	Begin	Begin	Begin
CSE	VIU	VIU	VIU
End	End	End	End

(b)

```
#include <stdio.h>
void main ()
{
    char cat;
    int ex, fm;
    float ti;
    scanf("%c", &cat);   // space
    scanf("%d %d", &ex, &fm);
    scanf("%f", &ti);
```

48

```
if ((ex ≥ 12 && fm > 5) || (ti < 1000.50)) {
    printf(" You are eligible");
  }
else if (cat == 'X' && fm > 6) {
    printf(" You are eligible");
  }
else if ((cat == 'Y' || cat == 'Z') && fm > 8
    && ti < 1100.78) {
    printf(" You are eligible");
  }
else {
    printf(" You are not");
  }
}
```

3

a

step 1

$i=1;\ i \le n;\ n=5$

$a=3;\ sign=1$

$sum = 0 + (3*1) = 3$

$i \% 2 \neq 0$

$a = 3+4 = 7$

$sign = -1$

step 2

$i=2;\ i \le n;\ a=7,\ sum=3$

$sign = -1$

$sum = 3 + (7 * -1) = -4$

$i \% 2 == 0$

$a = 7+6 = 13$

$sign = 1$

step 3

$i=3;\ i \le n;\ a=13;\ sum=-4$

$sign = 1$

$sum = -4 + (13 * 1) = 9$

$i \% 2 \neq 0$

$a = 13+4 = 17$

$sign = -1$

step 4

$i=4;\ i \le n;\ a=17;\ sum=9$

$sign = -1$

$sum = 9 + (17 * -1) = -8$

$i \% 2 == 0$

$a = 17+6 = 23$

$sign = 1$

step 5

$i=5;\ i \le n;\ a=23;\ sum=-8$

$sign = 1$

$sum = -8 + (23 * 1) = 15$

$i \% 2 \neq 0$

$a = 23+4 = 27$

$sign = -1$

step 6

$i=6;\ i > n$

↳ मिलाप

print → sum = 15.

50

(b)

```
#include <stdio.h>
void main() {
    int n;
    scanf ("%d", &n);
    int sum=0;
    for (int i=1; i<=n; i++) {
        if (n% i==0) {
            sum +=i;
        }
    }
    if ( sum < 2 * n) {
        printf (" Yes deficient");
    }
    else {
        printf(" No");
    }
}
```

4

a

step 1

$F[0] = 1;\ F[1] = 1$

$i = 2;\ i \le 5$

$F[2] = F[1] + F[0]$

$= 2$

print → 1 1 2

step 2

$i = 3;\ i \le 5$

$F[3] = F[2] + F[1]$

$= 3$

print → F[1] F[2] F[3]

1 2 3

step 4

$i = 4;\ i \le 5$

$F[4] = F[3] + F[2]$

$= 5$

print → F[2] F[3] F[4]

2 3 5

step 5

$i = 5;\ i \le 5$

$F[5] = F[4] + F[3]$

$= 5 + 3 = 8$

print → F[3] F[4] F[5]

3 5 8

Step 6

$i = 6;\ i > 5$

↳ স্টপ

print → F[4], F[5], F[4] + F[5]

5 8 13

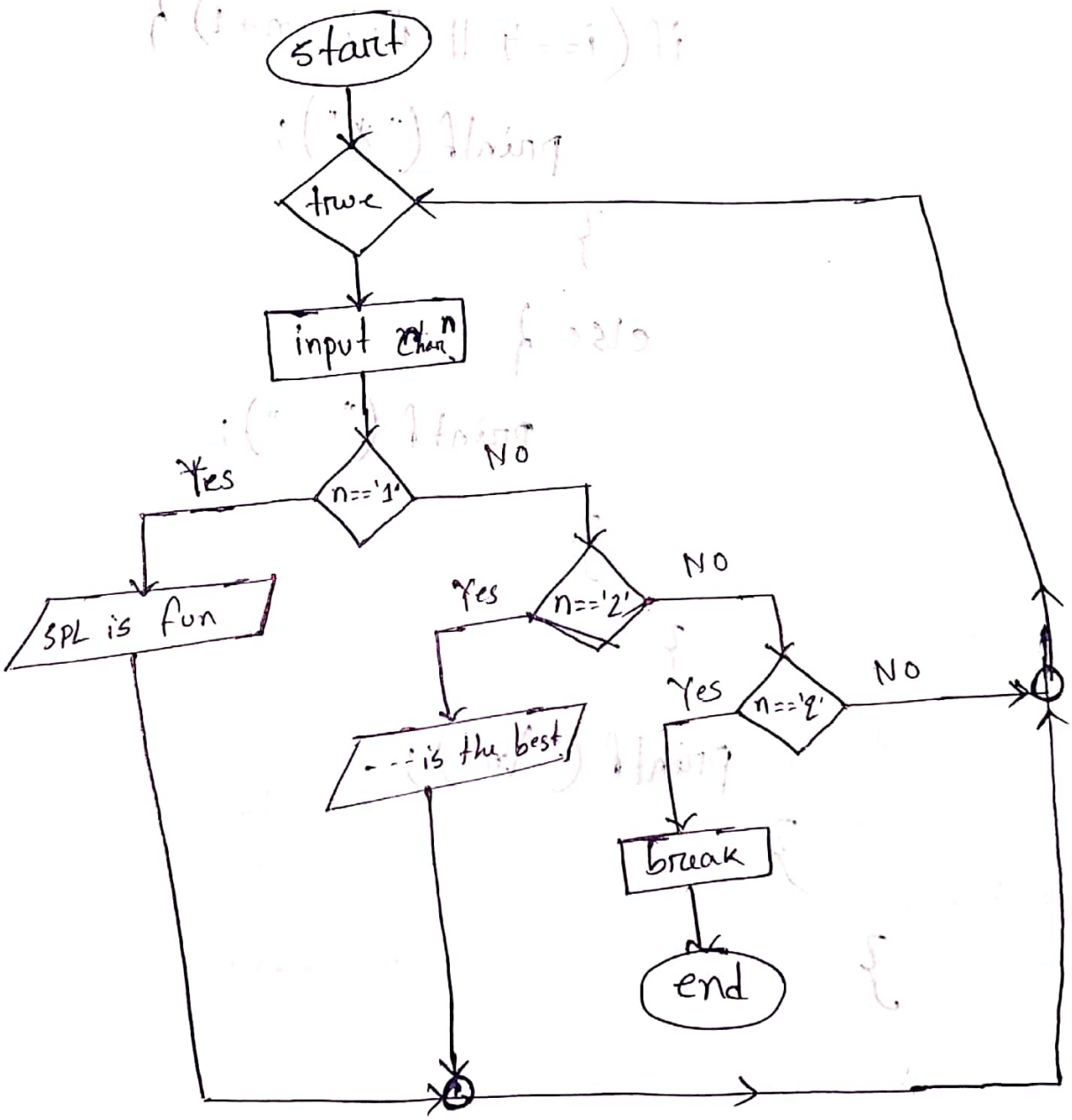
52

6

```
# include <stdio.h>
void main ( ) {
    int arr[100], n;
    scanf("%d", &n);
    for (int i=0; i<n; i++) {
        scanf("%d", &arr[i]);
    }
    int min = arr[0];
    int max = arr[0];
    int min_index = 0;
    int max_index = 0;

    for (int i=0; i<n; i++) {
        if (arr[i] < min) {
            min = arr[i];
            min_index = i;
        }
        if (arr[i] > max) {
            max = arr[i];
            max_index = i;
        }
```

```
}
printf("Max: %d, Index: %d \n", max, max_index);
printf("Min: %d, Index: %d", min, min_index);
}
```

5 a



(54)

(b)

```
#include <stdio.h>
void main() {
    int n;
    scanf("%d", &n);

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

Fall-22

1

a

```
#include <stdio.h>
int main(){
    int a, b;
    float sum;
    scanf("%d", &a);
    b = 10;
    sum = a+b;
    printf("%f", sum);
    return 0;
}
```

b

Valid	Invalid
sum_of_digit	switch → inbuilt function
value	Calculate sum → space not allow
Sum	calculate-sum → "-" " "
	1st_sum → number at first not allow

56

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

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

float c = 17/5 = 3.000000;

int d = (a>b) && c = 1;

(2)

(a) num = 3; i = 7; j = 2

Case 3:

Sum = 8 * 2

= 16

j = 1, i = 8

print → 16 8 1

(b)
```
#include <stdio.h>
int main()
    int num = 3, sum = 10, i = 7, j = 2;
if (num == 1 || num == 2)
    sum += --j * 2;
    i--;
    sum = ++i * j--;
}
```

```
if (num == 3) {
    sum = ++i * j--;
}

if (num == 4) {
    sum *= i++ / j--;
    i = i % j;
}

printf("%d %d %d", sum, i, j);
return 0;
}
```

3

a

```
#include <stdio.h>
void main() {
    int n;
    scanf("%d", &n);
    int sum = 0;
```

$\boxed{4n^2+n} = O(n)$

58

```
for (i=0; i<n; i++) {
    sum += (4 * i * i) + i;
}
printf("%d", sum);
}
```

b

step 1

n=4; Count=0

i=1; i≤n

j=1; j≤n-i
3

Count ≤ 3

Count = 1

step 2

i=1; i≤n

j=2; j≤3

Count ≤ 3

Count = 2

step 3

i=1; i≤n

j=3; j≤3

Count ≤ 3

Count = 3

step 4

i=2; i≤4

j=1; j≤2

Count = 0 ≤ 3

count = 1

step 5

i=2; i≤4

j=2; j≤2

Count ≤ 3

Count = 2

step 6

i=3; i≤4

j=1; j≤1

Count = 0 ≤ 3

Count = 1

step 7

i=4; i≤4

~~j=1; j≤~~

j=1; j>0

↓

मुश्किल

$\boxed{i=5 \quad j=1}$

$\boxed{\text{Count}=0}$

4 a

step 1

$i=0;\ i<5$

$j=1;\ j<5$

$arr[0] \neq arr[1]$

$size=5$

step 2

$i=0;\ i<5$

$j=2;\ j<5$

$arr[0]=arr[2]$

$size=4$

$j=1$

$arr[0]=arr[1]$

$=20$

step 3

$i=0;\ i<4$

$j=3;\ j<4$

$arr[0] \neq arr[2]$

step 4

$i=0;\ i<4;$

$j=3;\ j<4$

$arr[0] \neq arr[3]$

step 5

$i=1;\ i<4$

$j=2;\ j<4$

$arr[1] \neq arr[2]$

step 5

$i=1;\ i<4$

$i=3;\ j<4$

$arr[1] \neq arr[3]$

step 6

$i=2;\ i<4$

$j=3;\ j<4$

$arr[2]=arr[3]$

$arr[2]=arr[3]$

$=10$

$size=3$

$j=2$

step 7

$i=3;$ ~~$i<4$~~ $i==3$

$j=3;\ j==3$

~~भाग~~

Array → {20, 20, 10, 10, 100}

(6)

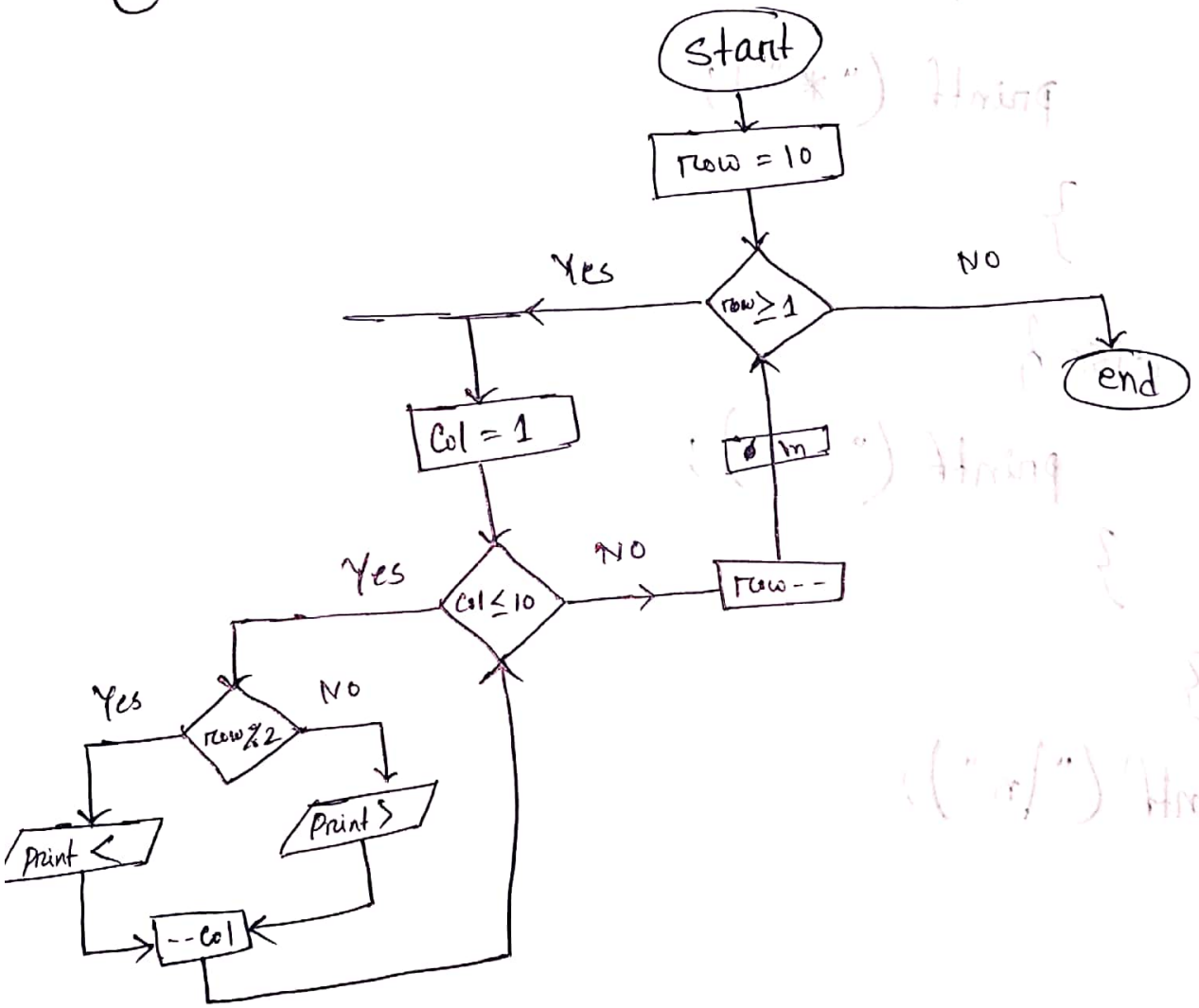
(b)

```
#inelude <stdio.h>

void main() {
    int marks[100], n;
    scanf("%d", &n);
  if (n ≤ 100) {
        for (int i=0; i<n; i++) {
            scanf("%d", &marks[i]);
        }

        int max = marks[0];
        int index = 0;
      for (int i=0; i<n; i++) {
          if (marks[i]%2==0) {
              if (marks[i]>max) {
                  max = marks[i];
                  index = i;
              }
          }
      }
}
```

```
    printf (" Max: %d, Index: %d", max, index);
}
else {
    printf ("Enter number <100);
  }
}
```

5

a



(C2)

(b)

```
#include <stdio.h>
void main () {
    int n;
    scanf ("%d", &n);
for (int i=1; i≤n; i++) {
    for (int j=1; j≤n; j++) {
        if ((i≤ n/2 +1 && (i==j || i+j==n+1))
            || (i > n/2+1 && j== n/2 +1)) {
            printf ("*");
        }
        else {
            printf (" ");
        }
    }
printf ("\n");
}
```