

Pseudo Code practice (1)

① Space required for this piece of code?

```
int sum(int B[], int n)
```

```
{  
    int s=0, j;  
    for(j=0; j<n; j++)  
        s=s+B[i];  
    return s;
```

Ans Size of (int) = 2 bytes

Array B[] of n integers, \rightarrow int is 2 bytes
 $\Rightarrow n \times 2 \rightarrow 2n$ bytes

$\rightarrow n, s, j \rightarrow 6$ bytes

Ans \rightarrow $2n+6$

② for input e=7 & f=8

work (input e, input f)

If ($e < f$)

return work (f, e)

else if ($f_1=0$)

return (e + work (e, f-1))

else

return 0

\Rightarrow work (7, 8) = work (8, 7)

work (8, 7) = $8 + 6, 8$

$8, 6 = 8 + 5$

~~8 > 5 true~~

\Rightarrow work (8, 7) = 56

03. Input $p=9$, $w=6$,

$p = p + 1;$

$w = w - 1;$

$p = p + w$

if ($p > w$)

print p

else

print w

$p = 10 + 1, w = 5 \Rightarrow p = 10 + 5 = 15$

$\Rightarrow 15 > 5 \Rightarrow \cancel{15}$

04. Input $t=6$, $b=9$ & let $x=0$

Integer c

if ($b > t$)

for ($c=t; c < b; c=c+1$)

$x = x + c$

End for loop

print x

else

print error message print x

~~so~~ $\Rightarrow a > b$ $c=6, 6 < 9$

$c=6 \quad x = 0 + 6 = 6$

$c=7 \quad x = 6 + 7 = 13$

$c=8 \quad x = 13 + 8 = 21$

$c=9 \quad x = 21 + 9 = 30$

Q5) Integer i
set i = 3

do

print i + 3

i = i - 1

while (i not equal 0)

end while

Ans: i = 3, $i = 3 + 3 = 6 \} \Rightarrow 6, 5, 4$
-1 i = 2, $i = 2 + 3 = 5 \} \Rightarrow 5, 4$
-1 i = 1, $i = 1 + 3 = 4 \} \Rightarrow 4$

Q6) for input a = 30, b = 60, c = 90 print "Success"

Integer a, b, c, sum

Read a, b, c

Set sum = a + b + c

if ((sum equals 180) & (a not equals b) & (b not equals
c) and (c not equals 0))

print "Success"

Otherwise

print "Fail"

End of.

~~Sol:~~ $8 = 30 + 60 + 90 \Rightarrow 180$

$\Rightarrow 8 = 180, (a = 20 \& b = 20 \& c = 20)$

~~Sol:~~ "Success"

$$a=2, b=6$$

5) Integer fum (Integer a, Integer b)
if (a>0)
 ; ; (b>0)

return $a+b+f\text{un}(a+1, 0)+f\text{un}(a+2, 0)+$
 $f\text{un}(a+3, 0)$

Grid if

End of

return at b

End function func()

$$\text{Solve: } a=2, b=6$$

$$\begin{aligned} \Rightarrow \text{fun}(3,0) &= 3+0 = 3 \\ \text{fun}(4,0) &= 4+0 = 4 \\ \text{fun}(5,0) &= 5+0 = 5 \end{aligned} \quad \left. \begin{array}{l} \Rightarrow 2+6+3+4+5 \\ \Rightarrow 20 \end{array} \right\}$$

8. Integer Loops

for each count from 0 to 9)

front of the road

~~if (Count > 6) then~~
~~CONTINUE.~~

print count

Good for ~~my~~ ~~books~~

Solv: #0 #1 #2 #3 #4 #5, #6 (97%), 98% (98%)

(b) Public will fear (Tree root)

func(mroot.left());

`func(mot, right());`

```
System.out.print (root.data());
```

Soln: Postorder traversal

→ In this, first left child is visited, then right child
and parent (final)

Note: InOrder

- * Direction: clockwise direction
- * Rule: LCR i.e. Left, Center (root), Right.

Preorder

- * Anti-clockwise direction is C(L,R) i.e. Center (root) and then Left, Right.
- * CLR i.e. Center (root), Left, Right.

Postorder

- * Anti-clockwise direction
- * LRC, Left, Right, Center (root)

(Q) Tree is a binary search tree. Which of the following code will help us to find the minimum element of Tree?

(a) public void min(Tree root)

(b) public void min(Green root)

```
while (root.left() != null)
```

```
while (root != null)
```

```
    root = root.left();
```

```
    if (root == root.left())
```

```
        System.out.println(root.data());
```

```
        System.out.println(root.data());
```

① public void min(Tree root)

while (root.right() != null)

{
 root = root.right();
}

System.out.println(root.data());

② Public void min(Tree root)

while (root != null)

{
 root = root.right();
}

System.out.println(root.data());

~~redundant~~ a → Binary search → $left < root < right$
 $\Rightarrow O(\log n)$.

③ ~~an algorithm to calculate $a_n = a + (n-1)d$~~
Pseudocode practice [e]

① Set $n=1$

Set $a=200$

while ($n \geq 100$):

$x = x - d$

$n = n - 5$

end while

write x.

~~Set:~~ $a_n = a + (n-1)d \Rightarrow 105 = 200 + (n-1) \cdot 5$

$$-95 = -5n + 5$$

$$-100 = -5n$$

$n=20$

$\frac{20^2 - 1}{2} [a+d]$

$$\frac{2}{2} [200 + 105] = 3050$$

$$x = 1 - n$$

$$x = 1 - 3050$$

$x = -3049$

② Set $x=0$;

Set $y=1$;

Set $n=0$;

print(0)

print(.)

while ($n < 10^{-2}$):

 set $z=x+y$

 swap x, y with y, z

 write z

 increment for n by 1

(Q)

$x=0, y=1, n=0 \quad n < 8$

$$z = x+y$$

$\Rightarrow 0, 1, 1, 2, 3, 5, 8 \rightarrow$ called Fibonacci Series

③ Integer x, y, z

set x=3

set y=90

while (y is greater than 0);

$$y = y/3$$

$$x = x+6$$

$$c = x+y$$

while (c is greater than 30);

if (c mod 3 is equal to 0):

 write x

else

 write y

$$c = c/5$$

 write c

~~Set checking condition, $y = y/3 = 90/3 = 30$~~

$$x = x+6 = 3+6 = 9$$

$$c > 30 \checkmark$$

$$c \% 8 > 0 \rightarrow 39 \% 5 > 0 \checkmark$$

$$\downarrow \quad 39 / 5 \neq$$

Continue

The answer will be,

$$\Rightarrow 9 \ \underline{3} \ 3 \ 6$$

Q4 int main()

{ integer num;

for (num equals to 80; num != 0, num++)

 write num++

 getchar();

 return 0;

}

Soln This code will go to infinite loop as the value of num will never be 0 & condition num!=0 will never be false.

\Rightarrow Infinite loop.

Q5 int main()

{

 int n=1;

 do

 {

 printf("%d", n);

 n--;

 if (n > 15)

 Continue;

 } while (0);

 return 0; }

~~S6~~ The value of x will get printed only once as the loop will read the while (false) statement after one iteration.

$\Rightarrow \underline{1}$

Q6 #include <stdio.h>

using namespace std;
int main()

{

 printf("%d", 'x' > 'x');
 return 0;

}

~~S6~~ $'x' > 'x' \rightarrow \text{false} \Rightarrow \underline{0}$

ASCII value of x is not greater than x , so the logical output will be false hence 0 will be printed.

Q7 #include <stdio.h>

using namespace std;
int main()

{

 for (int x=10; x>=0; x--) {

 int z=x & (x >> 1);

 if (z)

 print ("%d", x);

 }

}

~~S6~~: $x >> 1 \rightarrow \text{right shift of bit.}$

$1010 >> 0101 \& 0000 \Rightarrow 10$
 $= 1001 \Rightarrow 0100 \& 0000 \Leftarrow 9$

Ex: ft, 6, 3

⑧ #include <stdio.h>

int main()

{

int x=10, y=20, z=30;

z=x+y

printf("ftod", z);

return 0;

}

[2=20]

Assigning

ftod at

⑨ #include <stdio.h>

int main()

{

int x=20;

int y=0;

;

;

print("%d", y);

;

;

return 0;

{

Ex

0 \Rightarrow No error it will print 0 as value

If y was initialized to 0

⑩ #include <stdio.h>
void main()

{

int a=1.0, b=2, c=3.12;

char d='0,0';

f(a,b,c,d)

print("BHUDDSOLKENKRO");

{

}

~~Six~~ Also Output

→ parameters were not matched