patterns:Nagaraj battula
1]print pattern M in clock;

```
module pattern_1();
reg[4:0]m;
//reg a,b,c,d,e;
reg clk;
initial begin
clk=0;
forever #5 clk=~clk;
end
initial begin
m=0;
#10; m=5'b11111;
#10; m=5'b00000;
#10; m=5'b01000;
#10; m=5'b00100;
#10; m=5'b01000;
#10; m=5'b00000;
#10; m=5'b11111;
#10; m=0;
end
endmodule
```

2]print pattern N in clock

```
module pattern_n();
reg[6:0]n;
reg clk;
initial begin
clk=0;
forever #5 clk=~clk;
end
initial begin
n=5'b0;
#10;n=7'b1111111;
#10;n=7'b0000000;
#10;n=7'b0100000;
#10;n=7'b0000000;
#10;n=7'b0010000;
#10;n=7'b0000000;
#10;n=7'b0001000;
#10;n=7'b0000000;
#10;n=7'b0000100;
#10;n=7'b0000000;
#10;n=7'b0000010;
#10;n=7'b0000000;
//#10;n=7'b0000000;
//#10;n=7'b0000000;
#10;n=7'b1111111;
#10;n=7'b0000000;
end
endmodule
```

3]print any table all tables print by this logic

```
4 X 0 = 0
4 X 1 = 4
4 X 2 = 8
4 X 3 = 12
4 X 4 = 16
4 X 5 = 20
```

4 X 6 = 24
4 X 7 = 28
4 X 8 = 32
4 X 9 = 36
4 X 10 = 40//like any table we can print

```
module tables();
  integer i,num;
  initial begin
  num=4;
  for(i=0;i<=10;i=i+1)begin
  $display("%0d X %0d = %0d",num,i,num*i);
  end
  end
endmodule
```

4]print pattern

```
1
22
333
4444
55555
```

sol:

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=i;j=j+1)begin
  $write("%0d",i);
  end
  $display("");
  end
  end
endmodule
```

5]print pattern

```
1
12
123
1234
12345
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=i;j=j+1)begin
  $write("%0d",j);
  end
  $display("");
  end
  end
endmodule
```

6] print patter

```
55555
4444
333
22
1
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=5;i>=1;i=i-1)begin
  for(j=1;j<=i;j=j+1)begin
  $write("%0d",i);
  end
  $display("");
  end
  end
endmodule
```

7] print pattern

```
12345
1234
123
12
1
```

sol]

```
module pattern();
  integer i,j;
  initial begin
  for(i=5;i>=1;i=i-1)begin
  for(j=1;j<=i;j=j+1)begin
  $write("%0d",j);
  end
  $display("");
  end
  end
endmodule
```

8]print pattern

```
12345
12345
12345
12345
12345
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=5;j=j+1)begin
  $write("%0d",j);
  end
  $display("");
  end
  end
endmodule
```

9]print pattern

```
11111
22222
33333
44444
55555
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
```

```
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=5;j=j+1)begin
  $write("%0d",i);
  end
  $display("");
  end
  end
endmodule
```

10] print pattern

```
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=5;j=j+1)begin
  $write("* ");
  end
  $display("");
  end
  end
endmodule
```

11]print pattern

```
AAAAA
BBBBB
CCCCC
DDDDD
EEEEE
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=5;j=j+1)begin
  $write("%0c",64+i);
  end
  $display("");
  end
  end
endmodule
```

12] print pattern

```
ABCDE
ABCDE
ABCDE
ABCDE
ABCDE
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=5;j=j+1)begin
  $write("%0c",64+j);
```

```
  end
  $display("");
  end
  end
endmodule
```

13]print pattern

```
A
AB
ABC
ABCD
ABCDE
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=i;j=j+1)begin
  $write("%0c",64+j);
  end
  $display("");
  end
  end
endmodule
```

14]print pattern

```
ABCDE
BCDE
CDE
DE
E
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=i;j<=5;j=j+1)begin
  $write("%0c",64+j);
  end
  $display("");
  end
  end
endmodule
```

15] print pattern

```
54321
54321
54321
54321
54321
```

sol]::

```
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=5;j>=1;j=j-1)begin
  $write("%0d",j);
  end
  $display("");
  end
```

```
  end
endmodule
16]print pattern
54321
5432
543
54
5
sol]::
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=5;j>=i;j=j-1)begin
  $write("%0d",j);
  end
  $display("");
  end
  end
endmodule
17] print pattern
X
XX
XXX
XXXX
XXXXX
sol]::
module pattern();
  integer i,j;
  initial begin
  for(i=1;i<=5;i=i+1)begin
  for(j=1;j<=i;j=j+1)begin
  $write("X");
  end
  $display("");
  end
  end
endmodule
18] print pattern
5
44
333
2222
11111
sol]::
module pattern();
  integer i,j;
  initial begin
  for(i=5;i>=1;i=i-1)begin
  for(j=5;j>=i;j=j-1)begin
  $write("%0d",i);
  end
  $display("");
  end
  end
endmodule
19] print pattern
```

5
54
543
5432
54321
sol]::
```
module pattern();
  integer i,j;
  initial begin
  for(i=5;i>=1;i=i-1)begin
  for(j=5;j>=i;j=j-1)begin
  $write("%0d",j);
  end
  $display("");
  end
  end
endmodule
```
20]print pattern
12345
2345
345
45
5
sol]::
```
module pattern();
integer i,j;
initial begin
for(i=1;i<=5;i=i+1)begin
for(j=i;j<=5;j=j+1)begin
$write("%0d",j);
end
$display("");
end
end
endmodule
```
21] print pattern
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
sol]::
```
module pattern();
integer i,j;
initial begin
integer num=0;
for(i=1;i<=5;i=i+1)begin
for(j=1;j<=i;j=j+1)begin
num=num+1;
$write("%0d",num);
end
// $write("%0d",j);
$display("");
end
end
endmodule
```
22] print pattern

1
21
321
4321
54321
sol]::
```
module pattern();
integer i,j;
initial begin
//integer num=0;
for(i=0;i<=5;i=i+1)begin
for(j=i;j>=1;j=j-1)begin
$write("%0d",j);
end
// $write("%0d",j);
$display("");
end
end
endmodule
```
23]print pattern
12345
1234
123
12
1
sol]::
```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=5;i>=1;i=i-1)begin
for(j=1;j<=i;j=j+1)begin
// num=num+1;
$write("%0d",j);
end
$display("");
end
end
endmodule
```
24]print pattern
5
54
543
5432
54321
sol]::
```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=5;i>=1;i=i-1)begin
for(j=5;j>=i;j=j-1)begin
// num=num+1;
$write("%0d",j);
end
$display("");
end
```

end
endmodule
25] print pattern
54321
4321
321
21
1
sol]::
```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=5;i>=1;i=i-1)begin
for(j=i;j>=1;j=j-1)begin
// num=num+1;
$write("%0d",j);
end
$display("");
end
end
endmodule
```
26]print pattern
54321
5432
543
54
5
sol]::
```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=1;i<=5;i=i+1)begin
for(j=5;j>=i;j=j-1)begin
// num=num+1;
$write("%0d",j);
end
$display("");
end
end
endmodule
```
27] print pattern
ABCDE
BCDE
CDE
DE
E
sol]::
```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=1;i<=5;i=i+1)begin
for(j=i;j<=5;j=j+1)begin
// num=num+1;
$write("%0c",64+j);
```

```
end
$display("");
end
end
endmodule
```

28] print pattern

```
ABCDE
ABCD
ABC
AB
A
```

sol]::

```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=5;i>=1;i=i-1)begin
for(j=1;j<=i;j=j+1)begin
// num=num+1;
$write("%0c",64+j);
end
$display("");
end
end
endmodule
```

29] print pattern

```
ABCDE
BCDE
CDE
DE
E
```

sol]::

```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=1;i<=5;i=i+1)begin
for(j=i;j<=5;j=j+1)begin
// num=num+1;
$write("%0c",64+j);
end
$display("");
end
end
endmodule
```

30] print pattern

```
EDCBA
EDCB
EDC
ED
E
```

sol]::

```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=1;i<=5;i=i+1)begin
```

```
for(j=5;j>=i;j=j-1)begin
// num=num+1;
$write("%0c",64+j);
end
$display("");
end
end
endmodule
```

31] print pattern

```
E
ED
EDC
EDCB
EDCBA
```

sol]::

```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=5;i>=1;i=i-1)begin
for(j=5;j>=i;j=j-1)begin
// num=num+1;
$write("%0c",64+j);
end
$display("");
end
end
endmodule
```

32] print pattern

```
EDCBA
EDCB
EDC
ED
E
```

sol]::

```
module pattern();
integer i,j;
initial begin
// num=0;
for(i=1;i<=5;i=i+1)begin
for(j=5;j>=i;j=j-1)begin
// num=num+1;
$write("%0c",64+j);
end
$display("");
end
end
endmodule
```

33] print pattern

```
XXXXX
XXXX
XXX
XX
X
```

sol]::

```
module pattern();
integer i,j;
```

```
initial begin
for(i=1;i<=5;i=i+1)begin
for(j=i;j<=5;j=j+1)begin
$write("X");
end
$display("");
end
end
endmodule
```

34] print pattern

```
5
45
345
2345
12345
2345
345
45
```

sol]::

```
module pattern();
integer i,j;
initial begin
//num=0;
for(i=5;i>=1;i=i-1)begin
for(j=i;j<=5;j=j+1)begin
// num=num-1;
$write("%0d",j);
end
$display("");
end
for(i=2;i<=5;i=i+1)begin
for(j=i;j<=5;j=j+1)begin
$write("%0d",j);
end
$display("");
end
end
endmodule
```

35]print pattern

```
XXXXX
X X
X X
X X
XXXXX
```

sol]::

```
module pattern();
integer i,j;
initial begin
for(i=1;i<=5;i=i+1)begin
for(j=1;j<=5;j=j+1)begin
//$write("X");
if(i==1||i==5||j==1||j==5)
$write("X");
else
$write(" ");
end
$display("");
```

```
end
end
endmodule
```
36]print pattern
```
X X X X X
X X X
X X X
X X X
X X X X X
```
sol]::
```
module pattern();
integer i,j;
initial begin
for(i=1;i<=5;i=i+1)begin
for(j=1;j<=5;j=j+1)begin
//$write("X");
if(i==1||i==5||j==1||j==5||i==j)
$write(" X ");
else
$write(" ");
end
$display("");
end
end
endmodule
```
37]print pattern
```
X
X X
X X
X X
X X X X X
```
sol]::
```
module pattern();
integer i,j;
initial begin
for(i=1;i<=5;i=i+1)begin
for(j=1;j<=5;j=j+1)begin
//$write("X");
if(i==5||j==1||i==j)
$write(" X ");
else
$write(" ");
end
$display("");
end
end
endmodule
```
38] factorial number
sol
```
:module factorial();
integer i,num;
integer fact;
initial begin
num=5;
fact=1;
for(i=1;i<=num;i=i+1)begin
fact=fact*i;
```

```
$display("%0d || fact || %0d",i,fact);
end
//$display("fact=%0d",fact);
end
endmodule
```
39] even and odd numbers check
sol::
```
module odd_even();
integer i,num;
initial begin
num=50;
for(i=0;i<=num;i=i+1)begin
if(i%2==0)
$display("%0d || the number is even",i);
else
$display("%0d || the number is odd",i);
end
end
endmodule
```
40] check number prime or not
sol]::
```
module prime();
integer i,num;
integer count;//for count
initial begin
num=13;
count=0;
for(i=0;i<=num;i=i+1)begin
if(num%i==0)
count=count+1;
end
if(count==2)
$display(" %0d this is prime number",num);
else
$display("%0d this is not prime number",num);
end
endmodule
```
41] print prime numbers
sol]::
```
module prime_number();
integer i,j,num,count;
initial begin
num=100;
for(i=2;i<=num;i=i+1)begin
count=0;
for(j=1;j<=i;j=j+1)begin
if(i%j==0)
count=count+1;
end
if(count==2)
$display("%0d",i);
end
end
endmodule
```
42] palindrome
sol]::
```
module palindrome();
```

```
integer num,temp,rm,rev;
initial begin
num=121;
temp=num;
rev=0;
while(temp>0)begin
rm=temp%10;
rev=(rev*10)+rm;
temp=temp/10;
end
if(rev==num)
$display("%0d is palindrome",num);
else
$display("%0d is not palindrome",num);
end
endmodule
```

43] square root

sol]::

```
module square_root();
integer i,num,sq_root;
initial begin
num=100;
sq_root=0;
for(i=0;i<=num;i=i+1)begin
if(i*i<=num)
sq_root=i;
end
$display("squeare root of %0d is %0d",num,sq_root);
end
endmodule
```

44] cube root

sol]::

```
module cube_root();
integer i,num,cube_root;
initial begin
num=27;
cube_root=0;
for(i=0;i<=num;i=i+1)begin
if(i*i*i<=num)
cube_root=i;
end
$display("cube root of %0d is %0d",num,cube_root);
end
endmodule
```