

**Write a program that takes a command-line argument n and prints a table of the powers of 2 that are less than or equal to  $2^n$  till 256 is reached..**

```
#!/bin/bash -x
result=1
while [ $result != 256 ]
do
result=$((result*2))
((i++))
done
echo $result
```

### **Find the Magic Number**

- a. Ask the user to think of a number n between 1 to 100**
- b. Then check with the user if the number is less than  $n/2$  or greater**
- c. Repeat till the Magic Number is reached..**

```
#!/bin/bash -x
random=$((RANDOM%50*2))
noOfGuess=0
guess=$((RANDOM%50*2))
lowLim=1
upLim=100
while [[ $random -ne $guess ]]
do

    if [[ $guess -lt $random ]]
    then
        lowLim=$guess
        guess=$((($upLim+$lowLim)/2))
        ((noOfGuess++))
    elif [[ $guess -gt $random ]]
    then
        upLim=$guess
        guess=$((($upLim+$lowLim)/2))
        ((noOfGuess++))
    elif [[ $guess -eq $random ]]
    then
        echo your guess is correct
    else
        echo invalid
    fi
fi
```

```
done
echo correct guess - $guess
```

**Extend the Flip Coin problem till either Heads or Tails wins 11 times.**

```
#!/bin/bash -x
heads=0
tails=0
i=0
while [[ $heads -lt 11 && $tails -lt 11 ]]
do
    ((i++))
    result=$((RANDOM%2))
    if [ $result -eq 1 ]
    then
        heads=$((heads+1));
        echo $heads
    else
        tails=$((tails+1));
        echo $tails
    fi
done
if [ $heads -eq 11 ]
then
    echo heads in winner
else
    echo tails is winner
fi
```

**Write a Program where a gambler starts with Rs 100 and places Re 1 bet until he/she goes broke i.e. no more money to gamble or reaches the goal of Rs 200. Keeps track of number of times won and number of bets made.**

```
#!/bin/bash -x
limitWin=200
win=0
loss=0
amount=100
limitLoss=0
i=0
#for random value 1 is win and 0 is loss
```

```
while [[ $amount -lt $limitWin && $amount -gt $limitLoss ]]
do
    ((i++))
    result=$((RANDOM%2))
    if [ $result -eq 1 ]
    then
        amount=$(( $amount+1 ));
        ((win++))
        echo $amount
    else
        amount=$(( $amount-1 ));
        echo $amount
        ((loss++))
    fi
done
if [ $amount -eq $limitWin ]
then
    echo winner
else
    echo loser
fi
echo wins-$win
echo losses-$loss
```