**OS Assignment – 3**

**Operating System Lab**

1. To find Largest of Three Numbers

echo "Enter three numbers:"

read a b c

if [ $a -ge $b ] && [ $a -ge $c ]; then

echo "$a is the largest"

elif [ $b -ge $a ] && [ $b -ge $c ]; then

echo "$b is the largest"

else

echo "$c is the largest"

fi

2. To find a year is leap year or not.

echo "Enter a year:"

read year

if (( year % 4 == 0 && year % 100 != 0 )) || (( year % 400 == 0 )); then

echo "$year is a leap year"

else

echo "$year is not a leap year"

fi

3.To input angles of a triangle and find out whether it is valid triangle or not

echo "Enter three angles:"

read a b c

sum=$((a + b + c))

if [ $sum -eq 180 ]; then

echo "Valid Triangle"

else

echo "Invalid Triangle"

fi

4. To check whether a character is alphabet, digit or special character.

echo "Enter a character:"

read char

if [[ $char =~ [A-Za-z] ]]; then

echo "Alphabet"

elif [[ $char =~ [0-9] ]]; then

echo "Digit"

else

echo "Special Character"

fi

5. To calculate profit or loss

echo "Enter cost price and selling price:"

read cp sp

if [ $sp -gt $cp ]; then

profit=$((sp - cp))

echo "Profit: $profit"

elif [ $cp -gt $sp ]; then

loss=$((cp - sp))

echo "Loss: $loss"

else

echo "No Profit, No Loss"

fi

6. To print all even and odd number from 1 to 10

for i in {1..10}; do

if [ $((i % 2)) -eq 0 ]; then

echo "$i is Even"

else

echo "$i is Odd"

fi

done

7. To print table of a given number

echo "Enter a number:"

read n

for i in {1..10}; do

echo "$n x $i = $((n \* i))"

done

8. To find factorial of a given integer

echo "Enter a number:"

read num

fact=1

for (( i=1; i<=num; i++ )); do

fact=$((fact \* i))

done

echo "Factorial of $num is $fact"

9. To print sum of all even numbers from 1 to

sum=0

for i in {1..10}; do

if [ $((i % 2)) -eq 0 ]; then

sum=$((sum + i))

fi

done

echo "Sum of even numbers from 1 to 10 is $sum"

10. To print sum of digit of any number.

echo "Enter a number:"

read num

sum=0

while [ $num -gt 0 ]; do

digit=$((num % 10))

sum=$((sum + digit))

num=$((num / 10))

done

echo "Sum of digits is $sum"

11. To make a basic calculator which performs addition, subtraction, Multiplication, division

echo "Enter two numbers:"

read a b

echo "Choose operation: + - \\* /"

read op

case $op in

'+') echo "$a + $b = $((a + b))" ;;

'-') echo "$a - $b = $((a - b))" ;;

'\*') echo "$a \* $b = $((a \* b))" ;;

'/') echo "$a / $b = $((a / b))" ;;

\*) echo "Invalid operation" ;;

esac

12. To print days of a week.

days=("Sunday" "Monday" "Tuesday" "Wednesday" "Thursday" "Friday" "Saturday")

for day in "${days[@]}"; do

echo "$day"

done

13. To print starting 4 months having 31 days.

months=("January" "March" "May" "July")

for month in "${months[@]}"; do

echo "$month"

done

14. Using functions,

1. To find given number is Amstrong number or not

armstrong() {

num=$1

sum=0

temp=$num

while [ $temp -gt 0 ]; do

digit=$((temp % 10))

sum=$((sum + digit\*\*3))

temp=$((temp / 10))

done

[ $sum -eq $num ] && echo "Armstrong Number" || echo "Not Armstrong"

}

read -p "Enter a number: " n

armstrong $n

b. To find whether a number is palindrome or not

palindrome() {

num=$1

rev=0

temp=$num

while [ $temp -gt 0 ]; do

digit=$((temp % 10))

rev=$((rev \* 10 + digit))

temp=$((temp / 10))

done

[ $rev -eq $num ] && echo "Palindrome" || echo "Not Palindrome"

}

read -p "Enter a number: " n

palindrome $n

c. To print Fibonacci series upto n terms

fibonacci() {

n=$1

a=0

b=1

echo -n "$a $b "

for (( i=2; i<n; i++ )); do

fn=$((a + b))

echo -n "$fn "

a=$b

b=$fn

done

echo

}

read -p "Enter n terms: " n

fibonacci $n

d. To find given number is prime or composite

prime\_check() {

num=$1

if [ $num -le 1 ]; then

echo "Neither Prime nor Composite"

return

fi

for (( i=2; i\*i<=num; i++ )); do

if [ $((num % i)) -eq 0 ]; then

echo "Composite"

return

fi

done

echo "Prime"

}

read -p "Enter a number: " n

prime\_check $n

e. To convert a given decimal number to binary equivalent

decimal\_to\_binary() {

num=$1

bin=""

while [ $num -gt 0 ]; do

bin=$((num % 2))$bin

num=$((num / 2))

done

echo "Binary: $bin"

}

read -p "Enter a decimal number: " n

decimal\_to\_binary $n