Pascal's Triangle Coding Solution

HATFD1035

Problem Statement:

Print Pascal's Triangle Write a program to generate and print the first n rows of Pascal’s triangle without using built-in math or array functions. For n = 5, the output should be:

```
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```

SOLUTION:

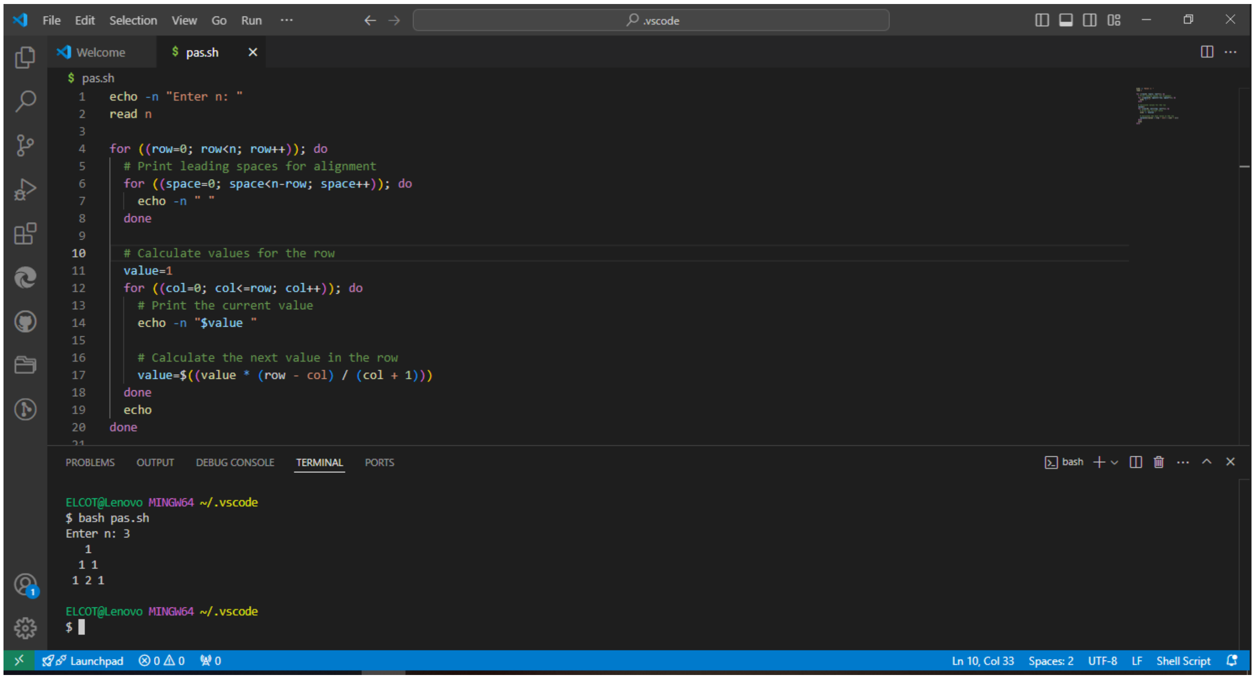
```
echo -n "Enter n: "
read n

for ((row=0; row<n; row++)); do
  # print leading spaces for alignment
  for ((space=0; space<n-row; space++)); do
    echo -n " "
  done

  # calculate values for the row
  value=1
  for ((col=0; col<=row; col++)); do
    # Print the current value
    echo -n "$value "
    # calculate the next value in the row
    value=$((value * (row - col) / (col + 1)))
  done
  echo
done
```

Sample Inputs/Outputs

Sample Input 1: Enter n: 3

Output:

```
  1
 1 1
1 2 1
```



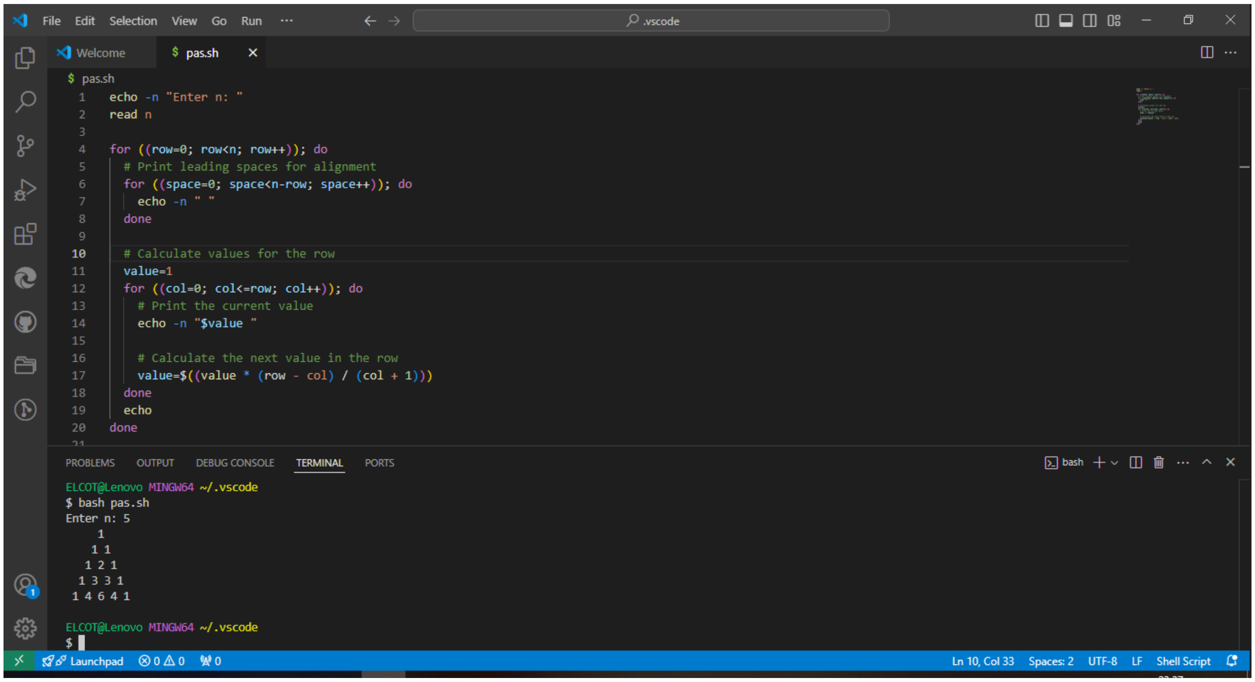
```
echo -n "Enter n: "
read n

for ((row=0; row<n; row++)); do
  # Print leading spaces for alignment
  for ((space=0; space<n-row; space++)); do
    echo -n " "
  done

  # Calculate values for the row
  value=1
  for ((col=0; col<=row; col++)); do
    # Print the current value
    echo -n "$value "

    # Calculate the next value in the row
    value=$((value * (row - col) / (col + 1)))
  done
  echo
done
```

```
ELCOT@Lenovo MINGW64 ~/.vscode
$ bash pas.sh
Enter n: 3
   1
  1 1
 1 2 1

ELCOT@Lenovo MINGW64 ~/.vscode
$
```

Sample Input 2: Enter n: 5

Output:

```
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```

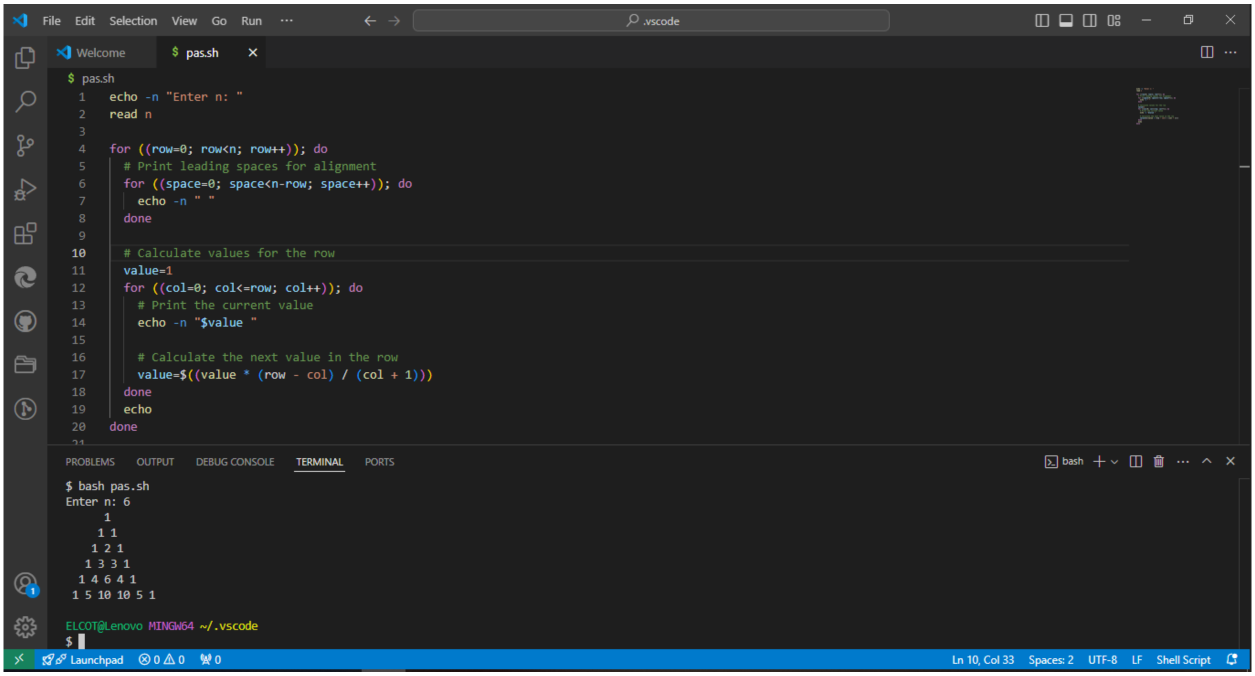


```
echo -n "Enter n: "
read n

for ((row=0; row<n; row++)); do
  # Print leading spaces for alignment
  for ((space=0; space<n-row; space++)); do
    echo -n " "
  done

  # Calculate values for the row
  value=1
  for ((col=0; col<=row; col++)); do
    # Print the current value
    echo -n "$value "

    # Calculate the next value in the row
    value=$((value * (row - col) / (col + 1)))
  done
  echo
done
```

```
ELCOT@Lenovo MINGW64 ~/.vscode
$ bash pas.sh
Enter n: 5
     1
    1 1
   1 2 1
  1 3 3 1
 1 4 6 4 1

ELCOT@Lenovo MINGW64 ~/.vscode
$
```

Sample Input 3: Enter n: 6

```
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1
```



pas.sh

```
echo -n "Enter n: "
read n

for ((row=0; row<n; row++)); do
  # Print leading spaces for alignment
  for ((space=0; space<n-row; space++)); do
    echo -n " "
  done

  # Calculate values for the row
  value=1
  for ((col=0; col<=row; col++)); do
    # Print the current value
    echo -n "$value "

    # Calculate the next value in the row
    value=$((value * (row - col) / (col + 1)))
  done
  echo
done
```

```
$ bash pas.sh
Enter n: 6
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1

ELCOT@Lenovo MINGW64 ~/.vscode
$
```