**Lab 10**

**Practice tasks**

**TASK 1:**

Write a program that reads an integer number n from the console and returns as output a rectangular frame with a size of n \* n.

|  |  |
| --- | --- |
| Input | output |
| 3 | + - +  | - |  + - + |
| 4 | + - - +  | - - |  | - - |  + - - + |
| 5 | + - - - +  | - - - |  | - - - |  | - - - |  + - - - + |
| 10 | + - - - - - - - - +  | - - - - - - - - |  | - - - - - - - - |  | - - - - - - - - |  | - - - - - - - - |  | - - - - - - - - |  | - - - - - - - - |  | - - - - - - - - |  + - - - - - - - - + |

**TASK 2:**

Write a program that reads an integer number n (1 ≤ n ≤ 20) from the console and returns as output Christmas tree with a height of n+1.

|  |  |
| --- | --- |
| Input | output |
| 1 | |  \*|\* |
| 2 | |  \*|\*  \*\*|\*\* |
| 3 | |  \*|\*  \*\*|\*\*  \*\*\*|\*\*\* |
| 5 | |  \*|\*  \*\*|\*\*  \*\*\*|\*\*\*  \*\*\*\*|\*\*\*\*  \*\*\*\*\*|\*\*\*\*\* |

**TASK 3:**

Write a program that reads an integer number n (1 ≤ n ≤ 26) from the console and returns a right-angle triangle of Alphabets like:

|  |  |
| --- | --- |
| Input | output |
| 1 | A |
| 2 | A  B B |
| 3 | A  B B  C C C |
| 5 | A  B B  C C C  D D D D  E E E E E |

**TASK 4:**

Write a program that prints a hollow diamond pattern. The program takes the numbers of rows from the user and displays a hollow diamond accordingly (the input must be an odd number).

|  |  |
| --- | --- |
| Input | output |
| 3 | \*  \* \*  \* |
| 5 | \*  \* \*  \* \*  \* \*  \* |
| 7 | \*  \* \*  \* \*  \* \*  \* \*  \* \*  \* |

**TASK 5:**

Write a code for an ice cream shop. Using Do while loop the shop displays its first menu that includes the choice of cup, cone, and exit. Once the user chooses his/her choice (cup or cone), another menu is displayed that asks the user to choose the flavor scoop (chocolate, strawberry, mint chocolate, vanilla, cookie n cream, and mango). User can choose more than one flavors, the user keeps on choosing the flavors until chosen exit. To achieve that the program asks the user to choose a flavor once, and then displays the menu again and again until exit is chosen.

The program further displays another menu for toppings. Toppings include sprinkles, chocolate chips, chocolate syrup, nuts, M&Ms. The user enters the chosen topping. Just like choosing flavors, the menu of toppings will keep of showing until chosen to exit.

Consider that as the requirement for one ice-cream, the user can choose another type of ice-cream after choosing flavors and topping for the first one. The system will keep asking until chosen exit from the first menu. As soon as the user selects exit, total bill will be displayed and the program should terminate.

Following are the prices:

* Cup: 20rs
* Cone: 10rs
* Chocolate: 40rs
* Strawberry: 50rs
* Mint chocolate: 60rs
* Vanilla: 40rs
* Cookie n cream: 60rs
* Mango: 50rs
* Sprinkles: 10rs
* Chocolate chips: 15rs
* Chocolate syrup: 15rs
* Nuts: 20rs
* M&Ms: 20rs