Rules and Document break down:

K players, such that K is greater than or equal to 2 or less than equal to 10

There are 5 possible ways for the pig to land:

1. **Side**: Pig lands on the side (either left or right side) [2/7]
2. **Razorback**: Pig lands on its back [1/7]
3. **Trotter**: Pig lands upright [1/7]
4. **Snouter**: Pig lands on its snout [1/7]
5. **Jowler**: Pig lands on one of its ears [2/7]

Rolling **Side** yields 0 points and immediately ends the current player's turn

The other player then rolls the pig

Game always start at player 0

Rolling either **Razorback** or **Trotter** earns 10 points for the player. Rolling Snouter earns 15 points. Lastly, rolling Jowler 5 points.

The game ends when any player has earned 100 or more points

Enumeration:

Use enumerations to represent each of the positions.

Enum are used to provide names for integer constants. Using this, we can represent the positions and the pig in the following manner

```
typedef enum { SIDE, RAZORBACK, TROTTER, SNOUTER, JOWLER } Position;
const Position pig[7] = {
  SIDE,
  SIDE,
  RAZORBACK,
  TROTTER,
  SNOUTER,
  JOWLER,
  JOWLER
};
```

The typedef is used to give a new name to a type. In this case, we used typedef to name the enumeration of positions as Position. The pig, then, can be represented as an array of positions.

The act of “rolling” the pig can be achieved by randomly selecting 1 of the 7 elements of the pig array.

Pseudorandom Numbers (simulate the rolling of pig):

Need *pseudo random number generator* (PRNG)

Utilize srandom() and random()

after calling srandom() with a seed to set, that the pseudorandom numbers that are generated with random() always appear in the same order.

Used so we can check if our program matches with the output of the program’s example

<u>What I need to do for this task:</u>

1. Ask the user to input the number of players, scanning input from stdin. Use scanf() to ask for input. If the player inputs a value that is between 2 and 10 inclusive, print →

```
1 fprintf(stderr, "Invalid number of players. Using 2 instead.\n");
```

2. Ask the user to input the random seed. If user inputs anything other than valid seed, print error like this →

```
1 fprintf(stderr, "Invalid random seed. Using 2021 instead.\n");
```

   then use 2021 as the default random seed
3. Set the random seed and make sure each player starts at 0 points.
4. Proceed around the circle starting from player 0. For each player:

a) Print out the name of the player currently rolling the pig. Use names.h file. Index 0 is player 0 etc
b) Roll the pig, increase the player’s point count until they either win the game or the pig lands on one of the 2 sides
c) If the player has greater or equal to 100 points, they win the game and a congratulatory message is printed to stdout
d) If rolled pig lands on one of its two sides, the player’s turn ends and the next player in the circle gets to roll

Expected input/output

```
wichapas@wichapas-VirtualBox:~/wpichetp/resources/asgn1$ ./pig
How many players? 10
Random seed: 69
Wilbur rolls the pig... pig lands upright pig lands on back pig lands on side
Charlotte rolls the pig... pig lands on side
John rolls the pig... pig lands on ear pig lands on back pig lands on back pig lands on side
Fern rolls the pig... pig lands on back pig lands on ear pig lands on snout pig lands on ear pig lands on ear pig lands on side
Templeton rolls the pig... pig lands on snout pig lands on ear pig lands on ear pig lands on ear pig lands upright pig lands on side
Avery rolls the pig... pig lands on side
Homer rolls the pig... pig lands on side
Henry rolls the pig... pig lands on side
Dr. Dorian rolls the pig... pig lands upright pig lands on side
Aranea rolls the pig... pig lands on back pig lands on snout pig lands on ear pig lands on snout pig lands on snout pig lands on side
Wilbur rolls the pig... pig lands on ear pig lands on snout pig lands on side
Charlotte rolls the pig... pig lands on ear pig lands on back pig lands on side
John rolls the pig... pig lands on side
Fern rolls the pig... pig lands on side
Templeton rolls the pig... pig lands upright pig lands upright pig lands on snout pig lands on side
Avery rolls the pig... pig lands upright pig lands on ear pig lands upright pig lands on back pig lands on side
Homer rolls the pig... pig lands on side
Henry rolls the pig... pig lands on ear pig lands on side
Dr. Dorian rolls the pig... pig lands on back pig lands on snout pig lands on side
Aranea rolls the pig... pig lands upright pig lands on ear pig lands on side
Wilbur rolls the pig... pig lands on ear pig lands on back pig lands on ear pig lands upright pig lands on side
Charlotte rolls the pig... pig lands upright pig lands on side
John rolls the pig... pig lands on ear pig lands on ear pig lands on side
Fern rolls the pig... pig lands on side
Templeton rolls the pig... pig lands on snout pig lands on side
Avery rolls the pig... pig lands on side
Homer rolls the pig... pig lands on side
Henry rolls the pig... pig lands upright pig lands upright pig lands on side
Dr. Dorian rolls the pig... pig lands on ear pig lands on snout pig lands on snout pig lands on ear pig lands on ear pig lands on side
Aranea rolls the pig... pig lands on ear pig lands on ear pig lands on ear pig lands on snout
Aranea wins with 105 points!
```

Easily, the first few part of the code will be the set up of taking in inputs of the number of players and the random seed. Then I have to create a loop that will allow the player to keep rolling until they roll a side, which a new player will be rolling instead. A few counters needed to keep track of the player rolling. Also, keeping track of the points can easily be done with a list or an array. To break out of the loop, check if some player has won 100 or more points. Then, we print the winner.

Rough Pseudocode:

playerPoints = [] (this is like an array or somethn)
playerCounter = 0
Names.h = {player names here}

input1 = ask for user to input number of players
input2= ask for user to input random seed

numPlayers = input1

For player = 0, player <= numPlayers, player++
    Roll dice with random
    While result of roll is not = side
        If result == “**Razorback” OR “Trotter”**:
            playerPoints[player] += 10
            Is result 100 or more?
            Winner found!

If result == “Snouter”:
playerPoints[player] += 15
Is result 100 or more?
Winner found!
If result == “Jowler”:
playerPoints[player] += 5
Is result 100 or more?
Winner found!
Roll dice with random
continue

WinnerFound:
_ _ _ _ Has won the game
Terminate program