Pseudocode

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Step 1: Start Program
Step 2: Declare all variables respectively
Step 3: Display hotel names
Step 4: while (selection != 6)
Step 5: for (int I = 0; selection > i; i++)
Step 6: if (selection == 1) then MV = MV + 1
Step 7: else if (selection == 2) then HV = HV + 1
Step 8: else if (selection == 3) then UV = UV + 1
Step 9: else if (selection == 2) then GV = GV + 1
Step 10: else if (selection == 2) then SV = SV + 1
Step 11: else inv = inv + 1
Step 12: break the loop
Step 13: the users choice of hotel again
Step 14: while(true)
Step 15: if (cin.fail()) then print “Numbers from 1 - 6 only please!!!”
Step 16: if(!cin.fail()) then break the loop and ask for the preferred hotel
Step 17: calculate the hotel with majority votes. i.e

```
double a = max(MV, HV);
double b = max(UV, GV);
double c = max(SV, a);
double d = max(b, c);
```

Step 18: if(MV == d) then winner = MV and a tie draw1 = winner
Step 19: if(HV == d) then winner = HV and a tie draw2 = winner
Step 20: if(UV == d) then winner = UV and a tie draw3 = winner
Step 21: if(GV == d) then winner = GV and a tie draw4 = winner
Step 22: if(SV == d) then winner = SV and a tie draw5 = winner
Step 23: calculate total votes by add all individual votes. i.e

```
tvv = (MV) + (HV) + (UV) + (GV) + (SV)
```

Step 24: calculate total valid votes. i.e

```
vv = tvv
```

Step 25: calculate total invalid votes. i.e

```
t_inv = inv
```

Step 26: calculate overall total votes. i.e

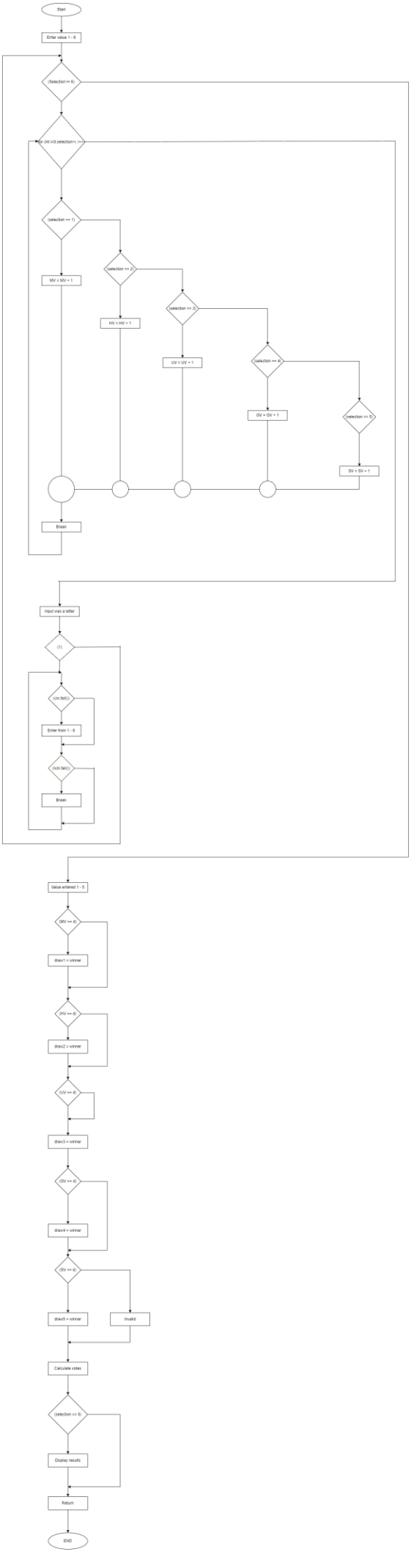
```
tv = tvv + t_inv
```

Step 27: calculate the percentage. i.e

```
pc1 = (MV * percent) / tvv;
pc2 = (HV * percent) / tvv;
pc3 = (UV * percent) / tvv;
pc4 = (GV * percent) / tvv;
pc5 = (SV * percent) / tvv;
```

Step 28: if(selection = 6) then
Step 29: Print the number of votes received by individual hotel
Step 30: Print the percentage for each hotel
Step 31: Print the highest voted hotel
Step 32: Print total valid votes
Step 33: Print total invalid votes
Step 34: Print Both (valid and invalid) votes
Step 35: Return 0
Step 36: End Program

Flowchart


Start
Enter value 1 - 6
(Selection != 6)
for (int i=0;selection<i; i++)
(selection == 1)
MV = MV + 1
(selection == 2)
HV = HV + 1
(selection == 3)
UV = UV + 1
(selection == 4)
GV = GV + 1
(selection == 5)
SV = SV + 1
Break
Input was a letter
(1)
(cin.fail())
Enter from 1 - 6
(cin.fail())
Break
Value entered 1 - 5
(MV == 4)
draw1 = winner
(HV == 4)
draw2 = winner
(UV == 4)
draw3 = winner
(GV == 4)
draw4 = winner
(SV == 4)
draw5 = winner
Invalid
Calculate votes
(selection == 6)
Display results
Return
END

Exercise 2

1. Hotel1 – Marriot, Hotel2 – Hilton, Hotel3 – Uprising, Hotel4 – Grand Pacific Hotel, Hotel5 – Sheraton, Quit – Exit, pc1, pc2, pc3, pc4, pc5, MV, HV, UV, GV, SV, vv, t_inv, inv, tvv, tv, winner, draw1, draw2, draw3, draw4, draw5, percent, selection.
2. Selection
3. Int was used for selection and because all hotels were listed as a whole number. Strings were used for hotel names and winner displaying because they were words. Double was used for all votes and percentage because the votes and percentage were to be displayed in decimals.
4. While loop is the best to validate the input because the user can input infinite times unless the condition (selection != 6) is false.

Exercise 3

Test 1 – All expected inputs were entered. The correct way of voting as instructed. And the expected outputs were printed to signify that the code works properly.

Test 2 – For this test, I chose alphabets to test if my input validation works. When an alphabets was entered, the program gave a warning as expected.

Test 3 – For the last test, I voted all the hotels equally (i.e 2 for marriot, 2 for Hilton and so on) to test if it showed a draw and as expected the program showed a draw amongst the 5 hotels.

Exercise 4

No, this is not ethical to do because it violates 3 of the 6 important ACS Code of Ethics. It goes against the 1st ACS code of ethics which is "The Primacy of the Public Interest" which states that the programmer should put the public's interest foremost compared to his own or sectional interest. It also goes against another COE, "Honesty", whereby the programmer isn't honest towards his coding and create a bug whereby the program is biased. And it also disrespects the members of the society which is another COE, "Professionalism". This behavior also violates numerous programming ethics such as hiding the bug, defaming etc.

Exercise 5

1. No
2. No
3. Yes
4. Yes
5. Yes
6. Yes