ASESMEN STRUKTUR DATA – 27/11/25

IF-12-07

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I.   SOURCE CODE

1. **IMPLEMENTASI:**

   Implementasi Queue pada sistem quest game story. Menyelesaikan quest sesuai urutan

```cpp
#include <iostream>
#include <string>
using namespace std;

const int MAX = 10;

struct Queue {
    string info[MAX];
    int head, tail;
};

void CreateQueue(Queue &Q) {
    Q.head = -1;
    Q.tail = -1;
}

bool isEmptyQueue(const Queue &Q) {
    return (Q.head == -1 && Q.tail == -1);
}

bool isFullQueue(const Queue &Q) {
    return (Q.tail + 1) % MAX == Q.head;
}

void enqueue(Queue &Q, string x) {
    if (isFullQueue(Q)) {
        cout << "Queue full.\n";
    } else {
        if (isEmptyQueue(Q)) {
            Q.head = Q.tail = 0;
        } else {
            if (Q.tail == MAX - 1) {
                Q.tail = 0;
            } else {
                Q.tail++;
            }
        }
        Q.info[Q.tail] = x;
        cout << "Quest ditambahkan: " << x << endl;
    }
}
```

```cpp
string dequeue(Queue &Q) {
    if (isEmptyQueue(Q)) {
        cout << "Queue empty.\n";
        return "";
    }

    string data = Q.info[Q.head];

    cout << "Dequeue: " << Q.info[Q.head] << endl;
    if (Q.head == Q.tail) {
        Q.head = Q.tail -1;
    } else
    if (Q.head == MAX - 1) {
        Q.head = 0;
    } else {
        Q.head++;
    }

    return data;
}

void printInfo(const Queue &Q) {
    if (isEmptyQueue(Q)) {
        cout << "Quest empty.\n";
    } else {
        cout << "Quest (Isi Queue): \n";
        int i = Q.head;

        while (i != Q.tail) {
            cout << i+1 << ". " << Q.info[i] << endl;
            i = (i + 1) % MAX;
        }

        cout << i+1 << ". " << Q.info[Q.tail] << endl;
    }
}

void printPreviousInfo(const Queue &Q) {
    int prev = Q.head-1;

    if (isEmptyQueue(Q)) {
        cout << "Quest sebelumnya: empty.\n";
        return;
```

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```cpp
86          }
87
88      if (isFullQueue(Q)) {
89          cout << "Queue penuh.\n";
90          return;
91      }
92
93      cout << "Quest sebelumnya: " << Q.info[prev] << endl;
94  }
95
96  int main() {
97      Queue Q;
98      CreateQueue(Q);
99      int input;
100     string data;
101
102     do {
103         cout << "\n === DarnSouls: Story Quests ===\n";
104         cout << "1. Add Quest (Enqueue)\n";
105         cout << "2. Finish Quest (Dequeue)\n";
106         cout << "3. Print Quest (List)\n";
107         cout << "0. Exit\n";
108         cout << "Inputkan disini le: ";
109         cin >> input;
110         cout << endl;
111
112         switch (input) {
113             case 1:
114                 // printPreviousInfo(Q);
115                 cout << "Tambah Quest (Enqueue): ";
116                 cin.ignore();
117                 getline(cin, data);
118                 enqueue(Q, data);
119                 printInfo(Q);
120                 break;
121             case 2:
122                 cout << "Selesaikan Quest (Dequeue): \n";
123                 cout << "Quest " << dequeue(Q) << "Selesai.";
124                 printInfo(Q);
125                 break;
```

```
126                    case 3:
127                        printInfo(Q);
128                        break;
129                    case 0:
130                        break;
131                    default:
132                        cout << "Input invalid.\n";
133                }
134        } while (input != 0);
135
136        return 0;
137 }
```

Output & Langkah:
1. Opsi 1 (Enqueue)

```
 === DarnSouls: Story Quests ===
1. Add Quest (Enqueue)
2. Finish Quest (Dequeue)
3. Print Quest (List)
0. Exit
Inputkan disini le: 1

Tambah Quest (Enqueue): Dapatkan Gelar Petualang dengan Membunuh Monster
Quest ditambahkan: Dapatkan Gelar Petualang dengan Membunuh Monster
Quest (Isi Queue):
1. Menuju Anor Londo
2. Bicara Kepada Guards
3. Bertemu dengan Asosiasi Guild
4. Dapatkan Gelar Petualang dengan Membunuh Monster
```

2. Opsi 3 (Print Queue)

```
 === DarnSouls: Story Quests ===
1. Add Quest (Enqueue)
2. Finish Quest (Dequeue)
3. Print Quest (List)
0. Exit
Inputkan disini le: 3

Quest (Isi Queue):
1. Menuju Anor Londo
2. Bicara Kepada Guards
3. Bertemu dengan Asosiasi Guild
4. Dapatkan Gelar Petualang dengan Membunuh Monster
```

3. Opsi 2 (Dequeue)

```
 === DarnSouls: Story Quests ===
1. Add Quest (Enqueue)
2. Finish Quest (Dequeue)
3. Print Quest (List)
0. Exit                              103112400061_Keishin
Inputkan disini le: 2

Selesaikan Quest (Dequeue):
Dequeue: Menuju Anor Londo
Quest Menuju Anor LondoSelesai.Quest (Isi Queue):
2. Bicara Kepada Guards
3. Bertemu dengan Asosiasi Guild
4. Dapatkan Gelar Petualang dengan Membunuh Monster
```

```
 === DarnSouls: Story Quests ===
1. Add Quest (Enqueue)
2. Finish Quest (Dequeue)
3. Print Quest (List)                103112400061_Keishin
0. Exit
Inputkan disini le: 2

Selesaikan Quest (Dequeue):
Dequeue: Bicara Kepada Guards
Quest Bicara Kepada GuardsSelesai.Quest (Isi Queue):
3. Bertemu dengan Asosiasi Guild
4. Dapatkan Gelar Petualang dengan Membunuh Monster
```