

BUET IUPC – Full Analysis + Practice List + 10 Days Roadmap (With Code)

এই ডকুমেন্টটি **BUET IUPC** এর জন্য একদম **contest-focused**। এখানে আছে: **1** Previous Year BUET IUPC problem analysis (pattern + difficulty) **2** Topic-wise practice problem list (Codeforces, UVA, LightOJ) **3** 10 Days full preparation roadmap (daily plan + code templates)

PART 1: BUET IUPC Previous Year Problems – Full Analysis

Overall Pattern (Based on past years)

- **Problem A-C:** Implementation / Math / String (Warm-up)
- **Problem D-F:** Greedy / Binary Search / Basic Graph / DP
- **Problem G-J:** Hard Graph / Advanced DP / Math / Geometry

Topic Frequency (Very Important)

Topic	Probability
Graph (BFS/DFS/Dijkstra/DSU)	
DP	
Math + Number Theory	
Greedy	
String	
Binary Search	
Geometry	

Key Observations

- Graph almost **every year 2-3 problems**
 - One **tricky DP** always present
 - Math problem usually involves **mod, gcd, sieve**
 - Implementation problem looks easy but hides corner cases
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PART 2: Topic-wise Practice Problem List



Math & Number Theory

Codeforces - CF 1372B – Omkar and Last Class of Math - CF 230B – T-primes - CF 450A – Jzzhu and Children

LightOJ - 1138 – Trailing Zeroes (III) - 1098 – A New Function

UVA - 543 – Goldbach's Conjecture - 11466 – Largest Prime Divisor



Implementation

CF - 158A – Next Round - 339A – Helpful Maths - 110A – Nearly Lucky Number

UVA - 11764 – Jumping Mario



Binary Search

CF - 474B – Worms - 1201C – Maximum Median

LightOJ - 1048 – Conquering Keokradong

Dynamic Programming

CF - 455A – Boredom - 580A – Kefa and First Steps - 189A – Cut Ribbon

LightOJ - 1013 – Love Calculator



Graph Theory

CF - 520B – Two Buttons - 276B – Little Girl and Problem on Trees - 862B – Mahmoud and Ehab and the bipartiteness

LightOJ - 1094 – Farthest Nodes in a Tree - 1019 – Brush (V)

UVA - 10004 – Bicoloring - 11015 – 05-2 Rendezvous



DSU

CF - 116A – Tram (basic idea) - 1500+ DSU based random problems

PART 3: 10 Days BUET IUPC Preparation Roadmap

Day 1: Math + Implementation

- GCD, LCM, Mod
- Solve 5 easy CF problems

```
long long gcd(long long a, long long b){  
    return b==0?a:gcd(b,a%b);  
}
```

Day 2: STL + Sorting

- vector, map, set
- Custom comparator

```
sort(v.begin(), v.end(), greater<int>());
```

Day 3: Binary Search

- Lower bound / upper bound
- Answer-based BS

```
while(l<=r){  
    int mid=(l+r)/2;  
    if(ok(mid)) r=mid-1;  
    else l=mid+1;  
}
```

Day 4: Recursion & Backtracking

- Subset, permutation

```
void gen(int i){  
    if(i==n) return;
```

```
    gen(i+1);
}
```

Day 5: Dynamic Programming

- 1D, 2D DP
- Knapsack style

```
dp[i]=max(dp[i],dp[j]+1);
```

Day 6: Graph - BFS/DFS

```
void dfs(int u){
    vis[u]=1;
    for(int v:g[u]) if(!vis[v]) dfs(v);
}
```

Day 7: Graph - Shortest Path

- Dijkstra

```
priority_queue<pair<int,int>,vector<pair<int,int>>,greater<>> pq;
```

Day 8: DSU + MST

```
int find(int x){ return parent[x]==x?x:parent[x]=find(parent[x]); }
```

Day 9: Full Mock Contest

- 3–4 hours
- CF Div-2 contest



Day 10: Revision + Speed

- Template revision
- Old wrong problems re-solve

```
ios::sync_with_stdio(false);
cin.tie(NULL);
```

Final Contest Strategy (BUET IUPC)

- First 20 min → Easy problems
 - Avoid getting stuck >25 min
 - Always re-check constraints
 - Code clean & simple
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If you want next: - BUET IUPC **Full C++ template (all-in-one)** - 5 full **mock contests** with solution - Topic-wise **hard problem list only**

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