ChatGPT

Cheer Competitions: Formats, Scoring, and Analytics

Competition Formats

All-Star Cheer (Club Teams): All-star cheerleading is organized by age groups and skill levels. Teams are classified into divisions by **age** (Tiny, Mini, Youth, Junior, Senior, etc.) and by **level** (Levels 1 through 7) which dictates the difficulty of skills allowed [1] [2]. For example, a Junior Level 2 team consists of middle-school-aged athletes performing intermediate skills, whereas a Senior Level 6 or 7 team has older athletes performing elite tumbling and stunts. All-star programs also differentiate between all-female teams and coed teams, and often by team size (Small, Medium, Large) based on number of athletes. In recent years, all-star has introduced tiers like *Novice*, *Prep*, and *Elite*: Novice/Prep teams have lower commitment and simpler routines (often only local events), while Elite teams compete full-season and can qualify for high-profile events like The Summit or Cheerleading Worlds [3] [4]. All-star competitions are typically high-production events held by companies (Varsity Spirit dominates many events [5]) and often span **two days** – teams perform routines on Day 1 and Day 2, with combined scores determining winners (some events use Day 2 score weighted higher or as finals). Divisions at major competitions may be split into **D1/D2** (large vs. small gym programs) to give smaller gyms a fair playing field [6]. A typical all-star event schedule might group routines by level: e.g. all Level 1 teams in a morning session, Level 2-3 in midday, Level 4+ in later sessions, each session ending with its own awards ceremony.

School Cheer (Scholastic Teams): School-based cheer includes elementary, middle school, high school, and even college competitions. These teams usually represent a school and follow rules set by organizations like **UCA (Universal Cheerleaders Association)** or state athletic associations. **Divisions** are often based on school size or enrollment class (e.g. Small Varsity, Large Varsity, 4A/5A based on school size) and sometimes separated into All-Girl vs. Coed squads [7]. High school routines often have a **"Game Day"** category and a **"Performance"** category. *Performance* routines resemble all-star routines set to music, while *Game Day* routines incorporate crowd-leading cheers, band chant, and fight song elements – showcasing sideline cheer skills (use of signs, megaphones, crowd engagement) in addition to stunts and tumbling [8]. A traditional high school competition routine (performance division) is usually **2½ minutes**, with a portion of that dedicated to a cheer segment (no music, leading crowd response) and the rest set to music for stunts, tumbling, dance, etc. At the National High School Cheerleading Championship (NHSCC by UCA), scoring is split between a **cheer section (35 points)** and a **music section (65 points)** which are averaged together [9]. School competitions can be one-day events or have prelims/finals. For example, a state championship might run preliminaries in the morning and finals later for top teams, or simply divide by classes in separate sessions [7].

Youth Recreational Cheer: "Rec" cheer teams are community-based (often affiliated with youth sports leagues like Pop Warner, AYF, YMCA, etc.) and typically younger athletes. These competitions are structured by age divisions with kid-friendly names (e.g. Tiny Mite, Mitey Mite, Pee Wee, Junior Pee Wee, Junior Varsity, etc., corresponding to specific age ranges) [10]. Rec teams might also be grouped by skill level: for instance, Pop Warner and other youth leagues have divisions like **Novice, Intermediate, Advanced**, roughly aligning

with all-star skill levels 1–3 [11]. Routine formats for youth rec can vary: some leagues require a cheer chant section and dance, while others allow an all-music routine ("show cheer"). For example, Pop Warner's Youth Cheer rules define a *Show Cheer* routine (up to 2:30 with music and cheer combo) and a *Sideline Performance Cheer* routine (focused on crowd-leading, shorter time) as separate categories [12] [13]. Rec competitions are often one-day events, and the atmosphere is a bit more relaxed and developmental. **Levels and rules are modified for safety** – e.g., younger age divisions have restrictions on stunts and tumbling for safety. In fact, the Youth Cheer Alliance (YCADA) provides tailored score sheets for each level to keep judging age-appropriate, with different point allocations at each level [14].

Typical Event Layout: A cheer competition day is usually divided into blocks or sessions by division or level. Each team is assigned a **warm-up time** and a **performance time**. Larger competitions use multiple warm-up stations (stretch, stunt, tumbling, full floor) that teams cycle through in the 30–60 minutes before performing. Schedules are published listing when each team warms up and takes the main floor. For example, a schedule might say *"Warm-Up 9:30 AM, Performance 10:00 AM – Spirit Elite Junior Level 2"*. After all teams in a session perform, there's an **awards ceremony** for those divisions before the next session begins. This session format keeps teams of similar type competing around the same time and lets families watch one block and see awards [7]. For parents and spectators, the schedule is often presented in a simple list or table sorted by time. It will include the team name, division/level, and performance time, and sometimes the venue (if multiple floors are running). Many event providers (like Varsity) also offer mobile apps to display personalized schedules, results, and notifications [15] [16] for convenience. An easy-to-read schedule might group teams by division or highlight your own team's slot. For example:

> **Session 1 (Youth Level 1 & 2)** – Warm-ups begin 8:00 AM
> 9:00 AM – **Tiny Stars – Youth Level 1** (Perform)
> 9:05 AM – **Mini Cheer – Youth Level 1** ...
> ...
> 10:30 AM – **Awards for Youth Level 1 & 2**

This way, parents know when and where their child's team performs, when awards happen, and can plan the day accordingly.

Scoring Systems

Scoring in cheerleading varies slightly across all-star, school, and rec leagues, but generally evaluates two major aspects: **Difficulty** (what skills are performed) and **Execution** (how well they are done). Score sheets are broken into categories that mirror the routine's elements, with judges assigning scores for each category and then subtracting any deductions for mistakes.

- **All-Star Scoring (USASF/Varsity All-Star):** All-star competitions use a unified scoring system that is now standard across most events [17]. The score sheet is typically divided into **three main sections**: **Building Skills**, **Tumbling/Jumps**, and **Overall Routine** [18]. *Building Skills* covers stunts, pyramids, and basket tosses – essentially any skills where athletes build structures. *Tumbling/Jumps* covers standing tumbling, running tumbling passes, and jump sequences. *Overall Routine* (or Performance) includes choreography, dance, formations, transitions, showmanship, and routine creativity [19] [20]. Each of these sections is further split into specific categories with points for Difficulty and for Execution. For example, in Building Skills judges award a **difficulty score** based on the hardest skills and quantity of athletes involved (e.g. how many stunt groups, difficulty of stunts performed) and an

execution score for technique (stability, form, synchronization). Tumbling is similarly judged – Difficulty might consider the number of tumblers and difficulty of passes (e.g. layouts, full twists) [20], while Execution looks at form (pointed toes, landings, timing). Jumps are often grouped with standing tumbling; Difficulty depends on how many jumps and combo skills are done and Execution on form and synchronization. The United Scoring System provides *"specific criteria for tumbling and jump difficulty, with points allocated based on number of athletes and complexity"* [20]. Judges also give scores for routine composition and creativity – rewarding innovative choreography, visual effects, and use of music. All-star routines emphasize cleanliness: **technique is heavily weighted** so a team that performs slightly easier skills very cleanly can outscore a team that throws harder skills poorly [21]. A typical all-star score might be out of 100 points, with each category contributing a certain maximum (e.g. Building 30, Tumbling/Jumps 30, Overall 20, etc., plus performance factors).

Common All-Star Score Sheet Sections: To illustrate, the Varsity All-Star score sheet (United Scoring) might allocate points roughly as: **Stunts Difficulty (0–5) + Stunts Execution (0–5)**, **Pyramids Difficulty (0–5) + Execution (0–5)**, **Tosses Difficulty (0–5) + Execution (0–5)** (for applicable levels), **Standing Tumbling Difficulty (0–5) + Execution (0–5)**, **Running Tumbling Difficulty (0–5) + Execution (0–5)**, **Jumps (combined difficulty/execution 0–5)**, **Choreography/Routine Composition (~5)**, **Performance/Showmanship (~5)**, etc. These are summed to a raw score (often scaled to 100). Execution is key – judges will deduct from the execution score in each category for form breaks (e.g. bent legs, falls). On top of that, **deductions** for falls or errors are taken off the final score (see "Deductions" below). All-star competitions often publish **ranges** that define what difficulty score you earn based on the skills. For example, a Level 4 team must do a certain number of elite stunts to hit the top range in stunt difficulty. This makes scoring more objective and consistent across judges [22]. Ultimately, the goal is to encourage teams to perform **level-appropriate skills with excellent technique** [23] – maxing out difficulty *only* if they can do it safely and cleanly.

- **School Scoring (Varsity/UCA & Others):** High school and collegiate cheerleading score sheets differ because of the **cheer portion** and the traditional emphasis on crowd-leading. Using UCA's system as an example, a high school routine is judged on a **100-point scale** split between the cheer section and the music section [9]. The *cheer section* (often 35 points) evaluates the team's **crowd-leading skills**: voice projection, motion technique, use of signs/poms/megaphones, crowd effective material, and ability to engage the audience (or pretend audience) during the cheer. The *music section* (65 points) covers stunt difficulty & execution, pyramids, tumbling, jumps, dance, and overall routine similar to all-star criteria. Judges score each part, then average them (since a school routine might do cheer then music sequentially) for a final score out of 100 [24]. Execution and technique are crucial here as well – sharp motions, synchronized jumps, proper tumbling form, etc., are expected. **Game Day divisions** (if present) are judged with a different focus: rather than difficulty of flips and tosses, Game Day scoring rewards **crowd energy, proper game-style chants, and motion technique**. Teams are often evaluated on categories like **Band Chant, Situational Sideline, Cheer, and Fight Song** in Game Day, with use of crowd-leading tools and genuine school spirit being key. (For instance, engaging the crowd and loud vocal calls are scored, which is unique to Game Day scoring.) In any scholastic scoring system, **safety violations** (like illegal moves or inappropriate choreography) incur penalties, and there is typically an overall impression score for things like sportsmanship and spirit. Many state associations follow NFHS (National Federation) safety rules and have their own rubrics, but broadly they align with the Varsity/UCA approach. The main difference from all-star is that school scoring explicitly rewards the *crowd-leading aspect* of cheer (which all-star

does not include) and may put slightly less emphasis on extreme difficulty – for example, pyramids in high school are generally simpler than all-star elite pyramids due to NFHS safety rules.

- **Recreational/Youth Scoring:** Recreational leagues (Pop Warner, AYF, etc.) often use modified score sheets that borrow elements from both school and all-star scoring, with an age-appropriate twist. For younger teams, the score sheet typically emphasizes fundamentals: **motions, jumps, basic stunts, dance, and overall pep**. Difficulty is scaled to the level of the division – e.g., a Youth Advanced team might throw back handsprings and extensions, whereas a Youth Novice team might be restricted to forward rolls and thigh stands. Each level in youth cheer can have its own score distribution. In fact, organizations like YCADA create separate scoring grids for each level so that, for example, a Level 1 team is not judged by the same weighting as a Level 4 team [14]. This means, at a novice level, motions and dance might carry more weight (to encourage technique and enthusiasm) and extremely difficult stunts aren't expected (or even allowed). A sample Pop Warner score sheet for a "Show Cheer" routine includes categories such as Cheers/Chants (if a cheer is included), Motions (technique and synchronization), Jumps, Stunts/Pyramids, Tumbling, Dance, Formations/Transitions, and Overall effect. Each is scored on a small scale (maybe 1-5 or 1-10 each). For example, "Jumps – 10 points (difficulty & form)", "Stunts/Pyramids – 20 points", etc., totaling perhaps 100. Rec judges also give **technical execution scores** and there are penalties for falls or safety breaks. One notable aspect in rec is that the rules and required elements can be more prescriptive – they might require a minimum number of jumps or a cheer section in the routine, to ensure the team shows a range of skills. Overall, recreational scoring is designed to be **educational and fair** for developing athletes. A novice team that performs a clean, well-synchronized simple routine can beat a team that attempted harder skills messily – reinforcing that mastery of basics and great showmanship are the goal at that level.

- **Score Sheet Elements & Deductions:** Across all systems, judges are watching for a variety of elements that must appear in the routine to maximize scores: *standing tumbling*, *running tumbling*, *stunts* (and often quantity of stunt groups or difficulty of entries/dismounts), *pyramid*, *jumps*, *dance*, and overall *choreography/performance*. Each of these appears as a section on the score sheet with an allotted point range [25] [26]. For instance, the Cheer UP Athletics breakdown confirms judges look at **Stunts, Tumbling, Jumps, Pyramid, Dance, and Overall Performance** in scoring a routine [27] [28]. In addition, certain **required elements** or *quantity requirements* must be met to avoid score penalties. For example, in all-star Level 5, to score in the highest stunt difficulty range, a team might need to perform a certain number of elite toss stunts involving most of the team. If they perform fewer, they get capped at a lower score range. Judges have *"difficulty drivers"* that outline these thresholds (like how many athletes must tumble, how many stunt groups, etc.) [29].

  Equally important are **penalized elements** – any mistake can incur a deduction from the score. Common deductions include: **falls or drops** from stunts, pyramids, or tumbling, stepping off the mat (**boundary violation**), going over the time limit, or other safety infractions. Deductions are usually predefined in severity. For example, a stunt bobble (minor instability) might be a 0.25 deduction or just an execution hit, whereas a stunt fall (flyer comes down to ground) might be 0.5 or 1.0, and a collapse with multiple people falling could be a larger deduction. Different competitions label these similarly: you'll see codes like *BB* = *Building Bobble*, *BF* = *Building Fall*, *AF* = *Athlete Fall*, etc. A **"building fall (BF)"** means a stunt or pyramid that falls to a lower position or collapses completely (flyer brought down or drops to cradle/floor) [30]. A **"building bobble (BB)"** is a stunt that wobbled or dipped but was saved without a fall – e.g. a flyer loses balance but bases save her, or an extended

stunt drops to knee level and goes back up [31]. **"Athlete fall (AF)"** refers to an individual tumbling/jump error, like when a tumbler's hands and knees hit the floor or a person falls on their butt during a skill [32] [33]. Judges document these deductions during the routine and subtract the respective points from the team's score. The end result after deductions is the **final score**.

In practice, a cheer team's score report will show their raw scores in each category, a sum (say 95.1 out of 100), then a list of deductions (e.g. "BF -0.75, AF -0.25") and then a final score (perhaps 94.1). At awards, teams are ranked by final score. Teams with **no deductions ("hit zero")** – meaning they executed a routine with zero falls or errors – take pride in that accomplishment, as it's like a "perfect game." (It's common to hear *"We hit zero!"* in all-star cheer, meaning no stunt falls, no busted tumbling, and no deductions at all [34].)

Common Score Sheets & Sections: To summarize, the exact sheets differ, but they share core sections. An all-star score sheet might list categories like *Stunts (Difficulty/Execution)*, *Pyramid (Difficulty/Execution)*, *Tosses*, *Standing Tumbling*, *Running Tumbling*, *Jumps*, *Dance/Choreo*, *Performance*. A school score sheet will have *Cheer* and *Music* sections, each broken into subcategories (motions, jumps, stunts, tumbling, pyramids, dance, etc.). A rec score sheet might simply list all the elements (cheer, motions, jumps, tumbling, stunts, dance) each worth a certain number of points. Regardless of format, the judging criteria aim to reward **difficulty done well**, penalize mistakes, and ensure teams perform within safety rules [35] [36]. Coaches often study these score sheets to strategize routine construction – balancing difficulty vs. potential execution deductions. The ideal is to maximize points by performing skills that push the top of the range *but* can be executed cleanly by the team.

Trackable Elements During a Routine

From a coach or excited parent's perspective, there are several key elements and incidents in a 2½ minute cheer routine that can be tracked in real-time. The goal in a tracking interface is to capture **major actions and errors** without requiring the user to dissect every detail (since the routine is fast-paced). Here are the main **trackable elements** someone could log live with quick taps, along with a recommended minimal set of stats to focus on:

- **Stunts:** These are the group lifts and tricks. Typically a routine has multiple stunt sequences (e.g. a stunt section in the beginning and potentially another later, plus a pyramid section). A tracker could let the user mark each **stunt sequence outcome** – did the stunt *hit* (completed successfully) or was there a **bobble/fall**? Since stunts are high-stakes, users will want to note if any stunt dropped or shook. For simplicity, one could have a "stunt fall" button to tap whenever a stunt collapses, and maybe a "stunt bobble" button for noticeable wobbles. Logging each stunt group individually might be too granular live, but if possible, identifying "Stunt 1, 2, 3…" outcomes is useful. Minimal stats: **number of stunt falls** and **number of stunt bobbles** in the routine. These directly correlate with deductions and are critical for the post-routine analysis (everyone wants to know if the team hit a clean routine or not).

- **Pyramid:** The pyramid (a large connected stunt sequence) usually happens toward the end of the routine. It involves most of the team and is visually dramatic. Track this separately from regular stunts. A simple toggle of **"Pyramid hit or fall"** is valuable. If the pyramid collapses or has a mishap, that's a big deal to note. Minimal stat: a boolean or indicator if the pyramid hit successfully or had a

fall (`PyramidHit = Yes/No`). If more detail is wanted: number of pyramid falls or bobbles (though usually there's just one pyramid section).

- **Tumbling Passes:** Cheer routines include many tumbling passes (both *standing tumbling* like back handsprings/tucks done in place, and *running tumbling* across the floor). It's hard to track every pass, but a tracker can log any **tumbling errors**. The key things to capture: did anyone fall on a tumbling pass (land on knees, butt, etc.) or put hands down (a touchdown)? A single button for "tumbling fall" could cover any **athlete fall** during tumbling. Additionally, a tracker might count how many *total passes* were performed, but that can be overwhelming to tally live. Instead, focus on mistakes: **number of tumbling falls** (or severe stumbles). Another approach is to track by athletes – e.g. mark if a particular athlete busted their pass – but in the heat of the moment, parents likely just note "one tumble fall happened." So minimal stat: **tumbling falls count**. If no one falls, that implies all tumbling was successfully landed.

- **Jumps:** Jumps (toe-touches, pikes, etc.) are usually done as a sequence by the whole team. They generally don't incur *falls* (rarely does someone fall on a jump), but form errors or lack of synchronization can affect scores. Live tracking for jumps could be simply noting if the jump sequence looked **clean vs. weak**. However, to keep it simple, one might skip detailed jump tracking or just have a checkbox for "All jumps executed" vs. "issues in jumps" (like a very obvious mistake – e.g., an athlete fell out of a jump or stopped). Jumps are more of an execution thing than something parents would individually log. So this could be optional. Minimal stat: maybe **"jump sequence executed cleanly"** as a yes/no flag, or even omit since judges' scores handle jump technique.

- **Dance/Motions:** The dance is the choreographed dance at the end of many routines (especially all-star). It's usually about showmanship and sharp motions. There typically aren't quantifiable errors in dance aside from energy and synchronization, which are subjective. For tracking, a parent might simply note the overall energy or if the team stayed in time with music. But it's hard to quantify live. Motions during the cheer section (for school/rec) could be noted if there was a visible mistake (like someone forgot a move), but again that's subtle. In a minimal stat tracker, **dance and motions** might not need discrete buttons. These are better evaluated via judges' scores rather than live stat. If desired, one could include a general **"overall execution"** rating (e.g., 1–5 stars) to capture an impression of cleanliness in dance/motions, but that might be too subjective for real-time input. It may be safest to omit or let the user write a quick note if something notable happened (e.g., "ended off-beat").

- **Timing and Music Errors:** If the team finishes **over time** (exceeding the 2:30 limit) or experiences a music problem, that's important. Over-time incurs a penalty, so a tracker could have an "Overtime" flag if the routine ran long (coaches usually time this, but occasionally adrenaline causes a slight overtime). Also, stepping off the 42x54 foot mat yields a boundary deduction – a "Boundary" button can note if anyone went out of bounds. These aren't common, but a comprehensive tracker might include: **Time Overrun** (yes/no) and **Out-of-Bounds** occurrences. These could even be combined under a generic "penalty" button if needed.

- **Falls/Deductions:** In summary, the critical live-tracked events are the ones that lead to deductions. A minimal set of **quick-tap buttons** could be: **Stunt Fall**, **Stunt Bobble**, **Tumbling Fall**, **Boundary**. Each tap increments a counter. At the end, the app could summarize "2 stunt falls, 1 tumbling fall, 0 boundary infractions." From these, it can infer total deductions (if one knows the scoring rubric, e.g.,

2 stunt falls = -1.0, etc.). Some trackers might also let you tag whether a fall was an athlete vs building fall, but to keep it simple, just logging the event is enough for users – they generally understand a stunt fall vs a tumbling fall.

- **Hit/Miss Indicator:** Many cheer parents simply care: *"Did the team hit?"* (Hit = no major errors). The app can automatically determine this: if no falls or serious bobbles were recorded, it can mark the routine as **"Hit Zero"** (zero deductions). Perhaps provide a big "Hit Zero!" button that a user can press at the end if they feel it was flawless. But automatically, if none of the error buttons were tapped, the routine was a hit.

- **Optional Detailed Stats:** If one wanted more granularity (perhaps for coaches): tracking each stunt group's performance (e.g., Group 1 fall, Group 2 hit), or which athletes fell in tumbling. This is valuable for later analysis but could overwhelm a live tracker. A compromise is to have a **"notes" field** for each routine where a coach can quickly dictate or type "Sally fell on her tumbling pass" or "Group 3 bobble". For an MVP, though, stick to numeric counts of major events.

Minimal Viable Stats to Track: To avoid overwhelming the user, focus on 4-5 key metrics: 1. **Stunt Falls** – count of stunt/pyramid collapses. 2. **Stunt Bobbles** – count of wobbles that were caught (some might lump this with falls if they just care about deductions). 3. **Tumbling Falls** – count of athletes falling on tumbling/jumps. 4. **Other Deductions** – boundary violations or overtime (rare, but trackable if they occur). 5. **Hit Zero Status** – a yes/no derived from the above (zero in all the above = hit zero).

These stats can be gathered with a few button taps and give a clear picture of how the routine went. For example, a parent with an app could quickly tap a "stunt fall" button if a stunt goes down, and a "tumble fall" if someone falls on a pass. If nothing is tapped, that means everything hit. Coaches love to later see, "We had 1 stunt bobble and 1 tumble touch – that's why our score had 0.75 in deductions."

Tracking these elements live not only helps produce immediate feedback ("We hit zero!" or "2 falls, roughly 1.25 in deductions") but also feeds into accumulated stats for the season.

Post-Routine Summary and Analytics

After a routine (and certainly after the competition), users are eager to see detailed results and analytics. A well-designed cheer competition module should present both **team-level outcomes** and **athlete-specific data** in an understandable way. Here's what people typically want in a post-routine summary:

- **Placement/Rankings:** First and foremost, teams want to know where they stand. The summary should show the team's **rank** in their division for that event, and the **score** that yielded that rank. E.g., "Panther Cheer – 2nd place out of 12 teams in Junior Level 3." If available, show how close it was: perhaps the difference to 1st place (e.g., "0.2 points behind 1st place"). Rankings matter a lot, and often users will compare across events (e.g., did we place higher this time?).

- **Score Breakdown:** Provide the **raw score and final score**. The raw score is the points before deductions, and the final score is after deductions. For example: "Raw Score: 95.4, Deductions: -1.0, Final Score: 94.4". Many like to see how deductions impacted them. Accompany this with **category**

breakdowns: how the team scored in each section of the score sheet. A table or bar chart works well:

Category	Difficulty	Execution	Score
Stunts & Pyramids	4.8 / 5	4.5 / 5	9.3 / 10
Tumbling & Jumps	4.0 / 5	4.2 / 5	8.2 / 10
Dance / Choreography	–	4.8 / 5	4.8 / 5
Performance / Overall	–	4.9 / 5	4.9 / 5
Subtotal			**95.1**
Deductions			**-0.75**
Final Score			**94.35**

Such a breakdown shows exactly where the team excelled or lagged. For instance, maybe they maxed out stunt difficulty but had some execution errors, or their tumbling difficulty score was low (meaning they might want to add harder tumbling). This is invaluable for coaches' strategy and for parents to understand the judging [37] [38]. If using Varsity/USASF scores, one can also display the *difficulty range achieved* (e.g., "Stunt Difficulty: 4.8 (High Range)").

- **Deductions Detail:** List the **deductions with explanation**. If possible, mirror the terminology judges use: e.g., "1 Building Fall (-0.75), 1 Athlete Fall (-0.25)" rather than just a total number [30] [39]. Many competitions provide a deductions sheet – having those details helps the team know exactly what went wrong. In-app, you could show: "Deductions: 1 stunt fall, 1 tumble touch = **1.0 total**". If the user tracked these live, you already have this data. This also feeds into trend analysis, like how frequently the team is incurring deductions.

- **Category Comparison:** It's useful to compare the team's scores in each category against previous performances or even against division averages. For instance, show a **trend line or sparkline**: *Stunts score over last 5 comps*. Or highlight improvement: "Jump execution improved by +0.5 since last competition" (maybe due to cleaner technique). If the data model stores historical scores, the app can say "This routine's 94.4 is 2.0 points higher than last competition's 92.4 – great improvement!" or "This is your highest score this season." Such context is very meaningful to users as it puts the result in perspective.

- **Ranking Context:** In addition to placement, people often want to know *how many teams they beat* and if they advanced (in multi-round events). For a two-day format, after Day 1 you might show "Rank 3 of 15 (qualified to finals)" and after Day 2 "Rank 2 of 15 (Up from 3rd after Day 1)". If the app can display the **scores of the top teams** (if publicly available), that's great for context. E.g., "1st place: 95.1, 2nd: 94.4 (your team), 3rd: 93.8…". This helps users see how tight the competition was.

- **"Hit Zero" and Safety Bonuses:** If a team had no deductions (hit zero), that's a badge of honor. The summary should clearly label a **Hit Zero Routine** (sometimes events give banners or pins for that).

Conversely, if the event had a safety deduction (for an illegal move), mention it explicitly because that often concerns coaches to fix immediately.

- **Previous vs. Current Performance:** A side-by-side comparison of the team's last performance vs this one can be very insightful. For example: "Last comp: Final Score 92.0 (3rd place); This comp: Final Score 94.4 (2nd place)." If it's a Day 1 vs Day 2 of the same competition, show both day scores and the combined result. Also, perhaps include the **season average score** as a benchmark.

- **Individual Athlete Analytics:** A cutting-edge feature is tracking stats for each athlete. Coaches and even some parents like to see contributions and consistency:

    - **Athlete Participation:** Show which athletes were in which parts of the routine. For example, a grid listing each athlete and checkmarks if they did a tumble pass, were in a stunt, were a main flyer, etc. If the app knows the routine composition (via stunt group data and tumbling passes), it can report things like: *Athlete Alice:* 2 tumbling passes (landed both), Flyer in Pyramid (hit), Base in stunt 2 (fall occurred). *Athlete Bob:* No tumbling, Base in 3 stunts (all hits).* This level of detail ties the routine outcome to individuals.
    - **Consistency Over Time:** If we track that, say, a particular stunt group fell at Competition A but hit at B and C, we can find patterns. An athlete-focused stat could be *"Tumbling pass hit rate"* – e.g., *Sophia attempted 3 passes this season and landed 2 cleanly (66%)*. Or *"Flyer fall rate"* – e.g., *Emily (flyer) has been in 5 stunt sequences this season with 1 fall (80% hit rate)*. These are great for identifying where athletes might need support or who the reliable performers are. It's also motivational – an athlete can see improvement (e.g., no falls in last 3 comps).
    - **Stunt Group Performance:** If stunt groups are defined, analytics can show each group's success percentage. For example, *"Stunt Group A (Emily, Kate, Sarah, Jenna) hit 4 of 5 comps (80%); Stunt Group B hit 5 of 5 (100%); Group C had struggles, hitting 2 of 5 (40%)."* A coach can use that to adjust training or rearrange stunt groups.
    - **Difficulty Contributions:** We can highlight which athletes did the most demanding skills. For instance, *"5 athletes performed a standing back tuck (highest difficulty standing tumbling); 2 athletes performed a full twist in running tumbling."* This identifies your power tumblers. If an athlete was missing (alternate stepped in) and difficulty dropped, you'd see why score changed.
    - **Injuries/Alternates Impact:** If the roster changes, analytics can note *"Team scored 0.5 lower in tumbling this week, likely due to missing John's tumbling pass."* This is advanced, but if data is there, it's possible.

- **Team Trend & Goals:** The post-event analytics page can also summarize the team's season so far. A chart of competition scores over time, or an average score per category (e.g., "Average stunt execution this season: 4.6/5"). This can be paired with goals like "Goal: hit 95+ final score" or "Improve jumps execution to 9/10". It depends if the module is only tracking competitions or also practice metrics.

In essence, after each routine the user should see **what the result was (score/rank)**, **why (breakdown and deductions)**, and **how it compares** (to others and to their past). For those deeply interested, athlete-level and skill-level analytics add another layer. Many of these data points are already on scoresheets or can be derived from our tracking. By presenting them clearly (with charts or labeled lists), we turn raw scores into actionable insights. For example, a coach seeing that *pyramid score is consistently lower* may decide to

increase pyramid difficulty next time. Or an athlete seeing they've fallen on 2 of 3 passes will know to focus on consistency.

Roster Modeling

Cheerleading teams have unique role structures, and modeling the roster means capturing both the **positions** athletes hold and how they work together in groups. Here are the key roles on a cheer team and how they contribute:

- **Flyer (Top):** The flyer is the athlete who is lifted into the air during stunts and pyramids. They perform body positions (like stretches, scales, scorpions) and dismounts (twists, flips) while trusting their bases to catch them. Flyers tend to be smaller athletes with great balance and flexibility. On a roster, one might tag certain athletes as flyers. Flyers are often involved in multiple stunt sequences and the pyramid. *Contribution:* A flyer's performance is critical – a solid flyer can hit body positions and stick landings, whereas a shaky flyer might wobble or fall. In stats, a flyer could be credited with how many of her stunts hit or any falls she was part of (though falls are rarely solely the flyer's "fault", it's a group effort). Still, tracking a flyer's success rate in stunts makes sense.

- **Bases:** Bases are the athletes who lift and hold up the flyers. In two-base stunts (common in all-star and school), there are usually two primary bases:

- **Main Base:** typically positioned under the flyer's foot (for one-legged stunts) providing most of the support [40]. They hold the majority of the flyer's foot and weight.
- **Secondary Base (Side Base):** positioned on the side, supporting the foot and assisting with the lift [41]. The side base helps balance the other side of the flyer's foot and works in tandem with the main base.

Bases need strength and coordination. Some stunts use only one base (coed style tosses) but youth and all-girl teams use two. On the roster, bases might not be distinguished as main vs side in data (coaches decide that per stunt), but you could note which athletes are bases generally. *Contribution:* Bases are part of stunt groups – their stability and technique affect whether stunts hit. We might attribute a stunt fall to the whole group (so bases share in that stat). Often bases are involved in multiple stunts.

- **Back Spot (Spotter):** The back spot stands behind the stunt, holding the flyer's ankles or calves and helping lift from behind [42]. The back spot also grabs the flyer's waist/hips in certain skills and is key in **catching** the flyer, especially if something goes wrong (catching upper body/head) [43]. They are usually taller members who can reach up high. In roster terms, back spot is a distinct role. Each stunt group typically has one back spot (except maybe in some pyramids). *Contribution:* Back spots often control the timing of a stunt and help keep it tight. They can prevent falls by steadying the flyer. Stats could track which back spot was in which stunt group and whether that stunt hit – e.g., *Athlete A was a back spot in 3 stunt sequences, all hits*.

- **Front Spot:** Not always used, but a front spot can stand in front of a stunt, giving extra lift or catching from the front. This is more common in youth teams or if a stunt needs extra support. Front spots are not required by rules [44], but if present, we could mark an athlete as a front spot for a specific stunt. *Contribution:* They provide additional stability, especially for difficult stunts or heavier flyers. If modeling, you might have a boolean "is front spot" per stunt group if applicable.

- **Additional Spotters:** In higher-level or risky stunts (or younger teams for safety), you might see extra spotters positioned at the sides of a pyramid, etc., who are there just to be ready to catch or stabilize [45] . These aren't primary positions in choreography, but they matter for safety. Usually not explicitly tracked in stats, but could be part of the group composition (they normally don't have direct stats except "no one fell on my watch!").

- **Tumblers:** In all-star especially, *everyone* is encouraged to tumble, but some athletes are *tumbling specialists* – they might not stunt (or take on minor stunt roles) but they perform the more difficult tumbling passes. For example, a team might have a few boys or girls who do layout-fulls across the mat – those are your power tumblers. In roster data, you might tag athletes with strong tumbling skills. *Contribution:* A tumbler contributes to the Tumbling Difficulty score – if they throw a high-difficulty pass, it elevates the team's score range. If modeling, you can store each athlete's tumbling level (e.g. has a back tuck, layout, full, double full). Then you can track "who did tumbling in this routine" and "did they land it". For instance, *Athlete B (tumbler) performed a running full, landed successfully.* Over time, one could see each tumbler's success rate or how often they perform.

- **Alternates/Reserves:** Alternates are team members who are not in the competing routine unless needed as a substitute. They practice with the team and may step in if someone is injured or sick. In the data model, alternates are still part of the roster, but flagged as "alternate" for a given event or routine. *Contribution:* Normally, alternates don't have stats unless they end up performing. But it's important to have them in the model to handle scenarios like comparing a roster vs performance lineup.

- **Captains/Leadership:** Not exactly a position in stunts, but teams often have captains. From a data perspective, we might want to mark who the captains are, though it doesn't directly affect competition scoring. It could matter for team management features in the app.

Stunt Groups and Links: To truly attach performance stats to individuals, you need to model **stunt groups**. A stunt group typically consists of 3-4 core athletes: 1 flyer, 2 bases, 1 back spot (plus maybe a front spot). Our model can have an entity like **StuntGroup**, with a list of members and their role (flyer/base/back). For example, Stunt Group A = {Flyer: Alice, Main Base: Bri, Side Base: Carol, Back: Denise}. Then, for each routine performance, we can record an event for each group – e.g., *Group A – stunt sequence 1 – hit*, *Group A – stunt sequence 2 – bobble*. This way, when a stunt falls, we know exactly which athletes were involved and can attribute that stat to them. Over a season, you might find, say, Group A has 1 fall in 5 comps, Group B has 0, Group C has 3 – indicating Group C is struggling. Also, if an athlete is in multiple groups (rare but sometimes a talented base might base two stunt sequences with different flyers), that can be captured too.

Many Roles per Person: It's common that an athlete has multiple roles: - A flyer might also do tumbling and jumps. - A base might also do a tumble pass or be part of the pyramid as a mid-layer. - A tumbler might also base in stunts if they have the build for it. So an **Athlete** entity should allow multiple role designations. This could simply be a multi-select ("roles: base & tumbler") or modelled via the positions they hold in stunt groups and whether they perform tumbling.

For each **routine performance**, it's useful to track which athletes actually took the mat (if the team has alternates). The data model might have a link table for Performance <-> Athlete (like **PerformanceParticipants** with fields like "performed=True/False, role in this routine"). This is because an athlete might be on the team roster but not perform in a particular competition.

Individual Stat Attachment: With stunt groups defined, any stunt fall stat can automatically be linked to all members of that group. Similarly, if an athlete falls in tumbling, that can be recorded on that athlete's record (like "tumbling fall at Event X"). Over time, an athlete profile could show: *5 competitions, 10 stunt performances, 0 stunt falls, 2 tumbling falls*. This helps identify, say, consistency of a flyer or a tumbler's reliability.

Summary of Roles: - **Flyer/Top:** The athlete lifted in stunts; key stat: stunt hit rate, flexibility metrics. - **Base (Main/Side):** Athletes lifting from below; stat: stunt hit rate, possibly which stunts they base. - **Back Spot:** Lifts from behind and catches; stat: stunt hit rate. - **Front Spot/Additional Spot:** Extra safety/support personnel; not always present, but can be noted. - **Tumbler:** Athlete performing tumbling passes; stat: tumbling pass success, hardest skill. - **Alternate:** On roster, not in routine; no stats unless activated. - **Others:** In some contexts, you might also mention *"mid-tier flyers"* (in pyramids, a layered pyramid might have mid-level people who are both base and flyer in pyramid) – but that might be too granular for youth levels.

Modeling these roles means our data model should allow tagging each athlete with one or more roles, and constructing groups of athletes for stunts. By doing so, we can attach routine outcomes (hits, falls, etc.) either to a group (affecting all its members) or directly to individuals (for solo skills like tumbling). This sets the foundation for meaningful personal stats and accountability in the analytics.

Event Schedule Structure

Cheer competition schedules are famously complex but can be presented neatly for users. A typical event schedule includes the following elements for each team: - **Team Name** (and often organization/gym name and division level) - **Division** they compete in (with level and category) - **Performance Time** – when they take the main floor - **Warm-Up Time** – when they start their off-mat warmup rotation (if provided publicly) - **Venue/Mat** – if an event has multiple stages or halls, which one they're in - **Awards Time** for that division or session

Events often break the day into **sessions** or blocks, grouping teams by similar divisions. For example, all Tiny, Mini, Youth teams might be in a Morning Session with awards at its conclusion, and Junior/Senior teams in Afternoon Session, etc. High school competitions might group by school size classifications in sessions (e.g., *"Dec 3 Morning Session: 4A & 5A"*) [7] .

Schedule Example: A user-friendly schedule might look like:

Saturday, Feb 10 – Awesome Cheer Championship
Session 1 (Youth Level 1 & 2) **– Awards at 11:00 AM**
- 9:00 AM – *Tiny Stars* (Youth Level 1) – Perform **(Hall A)**
- 9:05 AM – Mini Elite (Youth Level 1) – Perform
- …
- 10:30 AM – Dynamite Youth (Youth Level 2) – Perform
- 11:00 AM – Awards: Youth Lv1 & Lv2** (Hall A Stage)

Session 2 (Junior Level 3) – Awards at 2:00 PM
- 12:00 PM – Spirit Squad (Junior Level 3 Small) – Warm-Up

- 12:30 PM – Spirit Squad – **Perform** (Arena)
- 12:35 PM – CheerXtreme (Junior 3 Large) – Perform
- …
- **2:00 PM – Awards: Junior Level 3**

In the above, for Session 2, we showed a warm-up time example. Usually, coaches get a full warm-up schedule listing each station time (like stretch 12:00, stunt 12:10, tumble 12:20, music 12:25, report to backstage 12:30). For simplicity, the app might just show the start of warmups and the performance. Some competitions don't publish warm-up times to spectators, only performance times. If we have the data, showing it is useful for parents (so they know when their athlete needs to be at warm-ups).

Rotation Blocks: If the app is also used by coaches or staff, displaying the full warm-up rotation is golden. For example: *"Warm-Up: Station 1 at 12:00, Station 2 at 12:10, Station 3 (full out) at 12:20, On-deck at 12:30, Performance at 12:35."* But for general users, knowing **"Warm-Up start time"** is enough to ensure their athlete is on time and for planning meet-ups, etc.

Awards and Breaks: Including award ceremonies in the schedule is helpful. Parents want to know when to reconvene for awards and how long they might wait between performance and awards. So listing each awards block with time and which divisions it covers is recommended.

Display Considerations: The schedule can be shown as a chronological list or filtered by the user's team. Many will appreciate a **personalized schedule** view: e.g., select your gym or team and see just those times (especially if one family has multiple teams/kids). However, some users like to watch other divisions, so a full schedule by time is nice too.

On a phone screen, a **clean list format** is ideal. Possibly collapsible sections by session or division could be used. Each entry might have a small icon for performance vs awards, etc. For example: - **10:00 AM – [Team Name] – Performance (Level/Division) – Hall B** - **10:35 AM – Awards: Tiny/Mini Divisions – Main Stage**.

Another example taken from how state championships list it: *"Dec 3 Morning Session: 4A & 5A – 10:00am start; Dec 3 Afternoon Session: 3A & 2A – 3:30pm start"* [46] . The app could mimic that by labeling sessions clearly.

For Parents/Spectators: Emphasize the key times for **their team**: - When to arrive (could be warm-up or a bit before performance). - Performance time (the main event for their child). - When awards happen (so they don't miss the trophy ceremony). - If multiple days, note Day 2 schedule if they advance, etc.

If the event data is available, the module can also highlight special times like "Coach Check-in" or "Doors Open", but those are secondary.

In summary, the schedule structure in-app should present *Who*, *When*, *Where*. It might also show division info for context (so they know what block of teams they are in). The clarity of flow (perhaps separated by day and session) makes it easier to navigate. Since cheer comps often run ahead or behind schedule, a bonus could be real-time updates if a competition is running late/early, but that depends on integration. For design, assume static times but allow user to refresh for any changes.

Best Way to Generate an AI Routine Report

To create an AI-generated competition recap that *reads like a cheer parent or coach's meet report*, it's best to follow a narrative structure with specific cheer terminology and highlights. Here's a recommended outline for such a **routine recap report**:

1. **Introduction:** Start with the basic info – the team name, competition name, division, and an overview of outcome. For example: *"The Falcons Cheer Squad took the floor at the 2025 State Championship in the Small Varsity Division. They delivered an energetic routine that had the crowd on their feet. In the end, the Falcons earned 2nd place in a very close competition!"* This sets the stage, giving the reader context of where and what.

2. **Routine Highlights:** Describe the routine's key moments in chronological order. Mention the elements using cheer terms:

3. Stunts: e.g., *"They opened with solid two-legged stunts and quickly moved into an impressive series of one-legged extensions. All stunts hit with confidence – not a wobble in sight."* If a stunt sequence was visually notable, call it out (e.g., a creative transition or a difficult stunt like a full-up).
4. Tumbling: e.g., *"The tumbling section featured synchronized back handsprings and two athletes throwing aerial cartwheels. Tumbling passes were all landed cleanly, drawing cheers from the audience."* If there was a standout tumbling pass (say, a full twist or a beautiful pass), mention that athlete by first name or position: *"Captain Emily's running full twist pass was a highlight."*
5. Jumps: e.g., *"The team executed a high jump series (toe-touch to pike) with great height and timing."* If their jumps are a strength, note the perfect synchronization or technique.
6. Pyramid: e.g., *"The routine built to a dramatic pyramid where three flyers linked up in a visual display. The pyramid hit flawlessly, ending with a high flying cradle that drew a big applause* [47] *."*
7. Dance/Motion: e.g., *"They closed with a fierce dance sequence – sharp motions and big smiles showing off their confidence."*

Basically, this section is painting a picture of the routine and emphasizing what went well.

1. **Deductions or Mistakes:** If anything went wrong, address it in a factual but positive tone:
2. *"Mid-routine, one stunt dip nearly fell, but the team saved it – just a minor bobble."* or *"They had a small setback when a tumbler slipped on her landing, incurring a minor deduction."*

3. *"Aside from a brief stumble on a tumbling pass, the routine was error-free."* If the team hit zero (no deductions), definitely highlight that: *"The Falcons hit zero – zero deductions – for the first time this season, performing a completely clean routine* [34] *!"* This is huge praise in cheer. If not, frame the mistakes as learning moments: *"They had one stunt fall, but the athletes quickly regrouped and finished the routine strong."* Keep it constructive.

4. **Standout Athletes or Moments:** Identify any individuals or group moments that were exceptional:

5. *"Flyer Ava wowed the judges with a flawless arabesque and double-down dismount in the opening stunt."*
6. *"Jacob, one of the team's strongest tumblers, nailed his roundoff back tuck, showing marked improvement in form."*

7. *"The center dancer in the closing sequence (Sophia) had fantastic energy, really engaging the crowd."* This gives personal recognition. Parents especially love reading their child's name in a highlight. If the team is large, maybe highlight the stunt groups collectively: *"All three stunt groups performed with great synchronization."* or highlight the captains' leadership on the floor. If available, noting a *"first"* or special achievement is great: *"This was the first time the team threw three back tucks in synchrony – a new milestone."*

8. **Scores and Ranking Context:** Provide the competition result details to mirror what a coach would announce:

9. *"Their performance earned a 94.35 final score (with only 0.5 points in deductions). This was the second highest score of the day, less than a point behind the champion* [48] *."*
10. *"In a field of 10 teams, they placed 2nd, moving up from a 3rd place finish at last year's state championship."*
11. If it's a two-day comp or finals, mention day-over-day improvement: *"After sitting in 3rd after Day 1, the Falcons surged to 2nd place on Day 2 with a stronger, cleaner run."*

12. You can also reference category scores if notable: *"They scored especially high in jumps and choreography, reflecting their sharp technique."* This gives the reader a sense of achievement and how they fared relative to others.

13. **Comparison to Past or Goals:** Many recaps include a note on progress:

14. *"This performance was the team's best yet – nearly 2 points higher than their last competition."*
15. *"Coach Smith noted that the team improved their stunt execution score, a focus after their last competition."*

16. If they qualified for something: *"With this performance, they secured a bid to The Summit in Orlando."* (if relevant). Or if it's season-end: *"This silver medal finish caps off an incredible season for the Falcons."*

17. **Closing/Looking Forward:** End on a positive, encouraging note:

18. *"The team's hard work clearly paid off. They'll take these lessons and momentum into their next competition."*
19. *"Fans and coaches alike are proud of the strong showing, and the Falcons are more motivated than ever as they prepare for Nationals next month."* Acknowledge any thank-yous if appropriate (cheer world likes to thank coaches/parents): *"A big shoutout to the coaches for their dedication and to the parents for unwavering support."*

By following this structure, the AI report reads like a professional summary or a news article on the event, which is exactly what cheer parents expect and appreciate. The tone should be **enthusiastic, celebratory, and honest**. Even if there were mistakes, the report focuses on the positive and frames errors in context of the overall performance (nobody wants a negative recap even if they placed low).

For example, a condensed AI-generated recap might be:

"At the Red Rose Classic, Spirit Elite – Youth Level 2 delivered a high-energy routine. They wowed the crowd with synchronized back walkovers and creative stunts. All stunts hit solidly except for a slight bobble in the pyramid,

which the team impressively saved. Their jump sequence (two toe-touches into a hurdler) was the sharpest we've seen from them, and flyer Lily nailed a beautiful full-down dismount. Spirit Elite earned a 91.7 final score, placing 3rd out of 12 teams in a tough Youth 2 division. Notably, their motions and dance earned near-perfect marks, reflecting the team's focus on precision. Coach Jane Doe praised the athletes for their improvement – this score was 1.5 points higher than their last outing. With this strong performance, Spirit Elite is heading to Regionals with confidence and the goal of hitting zero next time!"

This kind of recap hits all the points: what happened, any deductions, standout skills, the score and placement, and an eye to the future.

Data Model Recommendations

Designing the data model for a cheer module requires representing teams, events, routines, scores, and participants in a relational way. Below is a proposed data schema with key entities and relationships, aimed at capturing the details discussed:

- **Team:** Represents a cheer team. Fields might include:
- `team_id` (PK)
- **Name** (e.g., "Falcons Cheer Youth 2")
- **Organization/Club** (for all-star, the gym name; for school, the school name)
- **Level/Division** – could be broken into fields: `competitive_level` (numeric level 1–7 or "Junior High" etc.), `age_group` (Tiny/Mini/Youth/Junior/Senior, or HS Varsity, JV, etc.), `division_category` (All-Girl, Coed, Rec, etc.), and `season` /year.
- **Team Type** – enumeration {All-Star, School, Rec, College, etc.} for context.

- **Members** – not a field per se (will be via roster relationship).

- **Athlete:** Represents an individual cheerleader. Fields:

- `athlete_id` (PK)
- **Name**, maybe first and last.
- **Birthdate/Age** (useful for determining age division eligibility).
- **Teams** – will link via a roster table since athletes could be on multiple teams (especially in all-star where a crossover might be on two teams).
- **Roles** – could be a set or list: e.g., primary role(s): Flyer, Base, Back, Tumbler, Alternate. This can be modeled as a separate table if many-to-many (one athlete many roles). Simpler: booleans like `is_flyer`, `is_base`, etc., but many athletes are multi-role so a related table `AthleteRole` might be cleaner.
- **Skills** – optional JSON or table to list tumbling skills, etc., if needed for detailed analysis (e.g., an athlete has standing tuck, level 5 tumbler).

- For contact info, etc., but that's outside competition scope.

- **TeamRoster / TeamMember:** An associative entity between Team and Athlete:

- `team_id`, `athlete_id` (together PK or with its own id)
- **Season/Year** – if teams are reused yearly, we might include which season this roster is for.

- **IsAlternate** – a flag if this member is an alternate (not usually performing).
- Possibly **position designation** here if a coach defines specific: e.g., "Main base" vs "Side base" for that athlete – though often an athlete can be base in one group, back in another, so role may vary per routine. The general role can be on Athlete, but perhaps a "preferred position" or note can be here.

- **Event:** Represents a competition event.

- `event_id` (PK)
- **Name** (e.g., "UCA Nationals 2025")
- **Date(s)** (start date, end date)
- **Location** (City/Venue)
- **Event Type** (maybe categorize as local, regional, national, etc., or link to producer like Varsity).
- Possibly a field for **Rounds** (e.g., Prelims/Finals or Day1/Day2 structure) to know if multi-performance.
- We might also have a separate **Session** concept, but sessions can be derived from schedule grouping.

- **Division (EventDivision):** Represents a division at a specific event. Because divisions vary event to event (with naming like "Junior Small Level 2" or "6A Large Varsity"), it's useful to have an entity for them:

- `division_id` (PK)
- `event_id` (FK to Event)
- **Name** (Division name at that event)
- **Level** (numeric or descriptor)
- **Age/Category** (Youth, Junior, High School Large Varsity, etc.)
- **Size or Class** (Small, Medium, Large, or school class 4A, etc.)
- **Type** (All-Girl, Coed, Game Day, etc.)
- This allows linking teams to the division they competed in.

- **Performance (Routine Performance):** Represents one performance of a team at an event (could be day 1 performance, day 2 performance, finals, etc.). Fields:

- `performance_id` (PK)
- **Team**, **Event**, and **Division** – likely `team_id` (FK), `event_id` (FK), `division_id` (FK). (Team and Division implies the event, but both can be stored for easy querying, or division could imply event).
- **Round** – a label or number (e.g., Prelims, Finals, Day 2) to distinguish multiple performances by same team in one event.
- **Performance Time** – timestamp of when they performed.
- **Scoresheet Data**: Here we can store the results:
    - Raw score, Deductions, Final score.
    - Or we normalize scores into a related table (below). But at least store final_score and total_deductions for quick access.
    - Rank (the placement achieved in its division for that round).

    - Possibly a JSON or blob for detailed judges' notes if any.
- **HitZero flag** – derived or stored if they hit zero deductions.
- **Stats**: we can include aggregate stats tracked:
    - num_stunt_falls, num_stunt_bobbles, num_tumble_falls, etc., as fields. These can be auto-filled from live tracking input.
- **Advancement** – maybe a pointer to next round performance if advanced.

Each Performance is essentially a routine outcome for a team. For two-day comps, a team would have two Performance records (one for each day) and perhaps an overall placement which might be recorded in the finals performance record.

- **ScoreBreakdown (PerformanceScore):** A table for detailed category scores linked to Performance:
- `performance_id` (FK)
- **Category** (could be enumerated or a reference table of score categories – e.g., "Stunts Difficulty", "Stunts Execution", "Pyramid Difficulty", etc.)
- **Score** (numeric value awarded)
- Possibly **MaxScore** or CategoryWeight (to know scale).
- Possibly **JudgeNotes** specific to that category.

This allows storing each section of the scoresheet. For example, `performance_id = 101, category = 'Standing Tumbling Exec', score = 4.5 (out of 5)`. This is very granular. If that's overkill, one could condense by broader categories (Building, Tumbling, Overall, etc.). But having a table means flexibility to adapt to any scoring system (just define categories per event type).

- **Deduction:** (optional) A table listing specific deductions for a performance:
- `deduction_id`, `performance_id`
- **Type** (Athlete Fall, Building Fall, etc.)
- **Quantity/Count** (e.g., 2 falls)
- **Points Deducted** (e.g., -1.0)

- This level of detail is nice for reporting exactly what happened. We could also just store total points deducted and maybe a text, but a structured table is more powerful for analysis (like tracking the frequency of BF vs AF for a team).

- **StuntGroup:** Represents a stunt group (usually persists for a season unless they reconfigure).

- `group_id` (PK)
- `team_id` (FK) – group belongs to a team.
- **Group Name/Identifier** (maybe "Stunt Group A" or we can just use the id).
- **Members:** We'd need a related table **StuntGroupMember**:
    - `group_id`, `athlete_id`, **role** (Flyer/Base/Back/Front).
- You might also attach attributes like *primary flyer's name* for quick reference.

StuntGroup is used to link athletes in a stunt unit.

- **StuntGroupPerformance (Stunt Outcome):** This table links a StuntGroup to a Performance and records what happened:
- `performance_id`, `group_id` (composite PK possibly)

- **Outcome** – e.g., Hit, Bobble, Fall for that routine. (If a group performs multiple times in one routine – usually one stunt group might do a sequence in main stunt section and again in pyramid – we could either record worst outcome or have multiple records by section. Simpler: one overall outcome per routine per group, where any fall in any section involving that group counts as a fall. For more granularity, we could include a field "section" or one record per section.)

- This allows queries like "how many times did Group A hit this season".

- **TumblingPass (or AthletePerformance):** If we want to track individual tumbling/jump participation:

- `performance_id`, `athlete_id`
- **TumblingPassPerformed** (boolean or count, e.g., did they do a pass?)
- **TumbleFall** (boolean if they fell on a pass)
- **JumpsPerformed** (maybe count of jumps they did, though usually team does same #)
- One could expand this to a more detailed list of skills per athlete per routine, but that might be beyond MVP. Instead, a simpler **AthletePerformance** table with one row per athlete per performance indicating if they were on the floor and any notable stats:
    - e.g., fields: performed=True, stunt_role in this routine (if one athlete flew and based, could list multiple), any falls that involved them (yes/no).

This could be populated by linking the data: e.g., if athlete was in a stunt group that fell, mark athlete had a building fall involvement; if athlete had a tumble fall, mark that.

- **Schedule Entries:** Could just derive from Performance times and division awards, but perhaps an **EventSchedule** table:
- `event_id`, maybe `session` as an attribute, `team_id`, `division_id`, `warmup_time`, `performance_time`, `order` (performance order number), `awards_time` (maybe stored at division level rather than each team).
- But likely we can generate schedule views from performance data and known warmup sequences. If needed, a separate schedule table could be imported from competition schedule spreadsheets.

With these, **relationships** are as follows: - Team – many-to-many – Athlete (via TeamRoster). - Team – one-to-many – StuntGroup; StuntGroup – many-to-many – Athlete (via StuntGroupMember). - Event – one-to-many – Division (each event has many divisions). - Team – competes in – Division (but through Performance, since performance links team and division). - Performance – belongs to a Team and an Event Division. Team can have multiple performances per event (if multiple rounds). - Performance – one-to-many – ScoreBreakdown; one-to-many – Deduction. - Performance – one-to-many – StuntGroupPerformance (or one-to-many via StuntGroupPerformance connecting to StuntGroup). - Performance – one-to-many – AthletePerformance (or Tumbling passes, etc.). - Athlete – can be tied to StuntGroup (for stunt involvement) and to Performance (for tumbling or participation).

Required Fields Summary: - **Team:** name, level, category, etc., to identify what division they belong in. - **Athlete:** name (and likely an id to link in groups/stats). - **Roster linkage:** ensures we know which athletes are on which team (and season). - **Event:** name, date. - **Division:** description of division at event (level, age). - **Performance:** links team+event (and division), holds scores and outcomes. - **ScoreBreakdown:** category scores (so we can show those analytics). - **Deductions:** breakdown of mistakes. - **StuntGroup & Members:** grouping of athletes in stunts, with roles. - **StuntGroupPerformance:** log of stunt group hit/miss each competition. - **AthletePerformance:** log of individual involvement and mishaps each comp. - **Schedule**

info: can be part of performance (performance_time) plus perhaps a separate warmup schedule data if provided.

This model supports the analytics we described. For instance, to get an athlete's stunt hit rate: find all performances where their stunt group had falls vs hits. To get team's average stunt execution: average the score breakdown entries for stunt execution category. To list all competitions a team attended and placements: query Performance by team sorted by event date, get rank. It's normalized enough to handle multi-team athletes or multi-round events.

Importantly, it's flexible for different scoring systems: we can add categories in ScoreBreakdown for UCA cheer portion vs music, or for rec-specific categories, without changing the structure – just the categories list.

International Variations

While the core of cheer competition format and scoring is similar globally (thanks to standardization by bodies like the USASF and ICU), there are some international variations to be aware of, so our model should be adaptable:

- **Different Governing Rules:** Outside the US, many countries follow the **IASF/ICU rules** for All-Star and the ICU rules for national teams. The division names and levels might differ slightly. For example, the IASF uses a 7-level system for All-Star (Level 1–6 and a Level 7 for worlds teams), whereas some countries only use Levels 1–6. The ICU (International Cheer Union) itself uses Level 0–6 for its age-group competitions (they introduced a beginner Level 0 for tiny athletes) [49] [50]. So, in an international context, a "Level 5" team might mean something slightly different if it's IASF Level 5 (which is a bit more advanced, closer to US Level 5 Restricted/Intermediate) [51]. Our data model can handle this by not hard-coding level meanings – instead perhaps storing a rule-set or simply allowing free text for division names (so "Level 5 (IASF)" vs "Level 5 (USASF)" can be distinguished if needed).

- **Age Divisions:** Different countries have different age cutoffs and division naming. For example, in the UK or Australia, they often use similar names (Youth, Junior, etc.), but the age ranges may vary by a year or two. Some countries might use "Peewee" or other terms. It's minor, but our model's Team and Division should not assume a fixed set of age categories – it should allow any string or an external lookup table for division definitions per country.

- **Scoring Systems:** The scoring categories might change. For instance:

- In the USA, All-Star uses USASF score sheets; other countries might use the **"International All-Star"** score sheet for worlds bids (which could emphasize creativity differently or have a slightly different difficulty grid). Generally, the categories remain Building, Tumbling, etc., but point values might differ or be scaled to 10 instead of 5, etc.
- High school/college cheer is predominantly an American thing; other countries often focus on All-Star or club sport cheer. However, some countries have "University cheer" divisions that might use ICU University rules.

- ICU World Championship scoring for national teams is on a **different scale (typically out of 150 points)** and splits difficulty/execution in a more detailed way. Also, ICU has categories like *Partner Stunt*, *Team Cheer Freestyle Pom* (dance divisions) etc., which are outside traditional All-Star. Our model should accommodate new categories or even different competition types (like Pom, Hip-Hop dance) as separate divisions types. The **Division** entity can include a type (Cheer vs Performance Cheer/Dance).

- **Terminology Differences:** In modeling, the terms "Coed" vs "All-Girl", or "Small/Large" etc., are fairly universal in All-Star now. But some places might not split small/large if fewer teams. We should allow open input for division names rather than enum these. Also, levels might be called "Elite, Premier" etc., for certain international divisions (for example, ICU has "Premier" for highest national team division).

- **Scoring Variation Example:** A skill might be legal in one rule set and illegal in another, impacting deductions. For example, IASF allows certain twisting mounts at a lower level than ICU allows [52] [53]. From a data perspective, this affects how we interpret a performance's difficulty. But since our app is mostly tracking outcomes and scores rather than enforcing legality, we just need to handle that deductions may be different. Possibly, we might include the *rule set* in the Event or Division (like a field to indicate "USASF Scoring" vs "IASF Scoring" vs "ICU Scoring"), in case we need to adjust how scores are calculated or displayed. For instance, ICU might not split difficulty/execution in the public scores – they sometimes just give total scores.

- **International Teams and Bid Events:** Some competitions have the concept of bids (qualifications to larger events like Worlds). This isn't a structural difference but a context difference – an international user might care about tracking if their team got an Worlds bid or not. The data model could include a field on Performance like `bid_award` (yes/no/type).

- **Team Size limits:** In US all-star, team size can be up to 30, but some countries limit to 24. Our roster model should be flexible (no fixed number assumption).

In summary, **format changes across countries are minor** – mainly naming and slight rule differences. The module can scale by: - Not hardcoding division definitions – allow custom ones per region. - Allowing flexible scoring category configuration (so if a new category or different weighting comes up, we can handle it). - Possibly capturing which rulebook was used for a competition (for reference). - Handling that some countries have mixed formats (e.g., some have both school cheer and all-star but with smaller participation).

Our model as described is robust enough for international use: you might just populate it with different division names and scoring breakdowns. For example, in UK, they often have "Level 1 Youth Cheer", etc., which is essentially the same as US but run by UK federations. If some country does something unique (like in Japan, cheerleading has a lot of group stunts competitions separately), we may need to extend to accommodate if needed. But the primary focus – team routines – is universal.

The key takeaway is to remain **configurable**: as long as the data model isn't US-specific (which it isn't, aside from some example labels), it should handle international variations seamlessly.

UX Considerations for Live Routine Tracking

Tracking a cheer routine in real-time on a phone is challenging, so the UI must be extremely simple, quick, and clear. Here are some UX recommendations to make live tracking easy for a ~2:30 routine:

- **Minimal Tappable Buttons:** As discussed, we only want a handful of buttons on screen during the routine. These should be large and well spaced (so you can tap without precision, perhaps even if your hand is shaking with excitement!). Likely buttons: **"Stunt Fall", "Stunt Bobble", "Tumble Fall", "Boundary"** (and maybe "Other" for any miscellaneous deduction like time over or safety). Use color-coding or icons (e.g., an up-arrow icon for stunts, a flip icon for tumbling, etc.) with labels. The user should be able to log an error with one quick tap. No text input, no small checkboxes – big, obvious buttons. For example, a red icon of a person falling for "Fall" events.

- **One-Handed Operation:** Assume the user might be holding a phone in one hand and clapping or holding a sign/camera with the other. Layout the buttons so that one thumb can reach them all (consider larger phones too). Perhaps a cluster in the lower half of screen. Alternatively, use a simple gesture (though multi-button is easier than trying to do swipe directions in a high-pressure moment).

- **Confirmation/Undo:** When a user taps a button (say "Stunt Fall"), give immediate visual feedback – e.g., the button flashes or a +1 counter appears. Possibly play a subtle click sound or haptic vibration (so they know it registered without looking, though at a loud comp they might not hear a sound; haptic could work). Also allow an easy "undo" in case they tapped by mistake – maybe tapping the same button again within 2 seconds toggles or reduces the count. Or have a small "undo" button near the last action logged.

- **Auto-Timing (optional):** The app could timestamp each tap internally. That way, later on one could see at which point in the music the error happened. But displaying time to the user isn't necessary during tracking. If anything, maybe show a simple stopwatch that started when routine began, just so user knows how far in we are. But this could clutter; might not be needed.

- **Pre-Routine Setup:** If the user knows the routine composition (e.g., 3 stunt sequences + pyramid), the app could present those as slots to fill (like 4 icons representing each stunt round and you tap any that fell). But expecting parents to set that up might be too much. Instead, an alternative approach: just track generically during the routine, then *after* the routine, perhaps prompt the user with a summary screen to attribute falls to specific groups or sections if they want. For MVP, keep it generic.

- **Visibility and Contrast:** The UI should likely have a dark background (since competitions are often in dimly lit arenas) and bright high-contrast buttons. Large text labels ("STUNT FALL") along with the icon would help. Also consider many cheer parents might be new to the app – it has to be obvious without training.

- **Prevent Overwhelm:** Some users may choose not to press anything during the routine because they're nervous or cheering. That's fine – the app should handle if nothing is pressed (it then defaults to "no errors"). It might even have a single big button "Routine Hit Zero!" that they can press at the

end if nothing bad happened, as a affirmative action (though if nothing was logged, we can infer hit zero anyway). But a celebratory “Hit Zero” button that triggers a fun animation (confetti) might be a delightful touch and easier than tapping multiple minor things. For instance, an alternate flow: one giant toggle at end – *Did they hit zero?* Yes/No – and if No, then let them quickly tap what went wrong. But that relies on memory rather than real-time, which might be less accurate.

- **Quick Deductions Summary Post-Routine:** Right after the routine, the app can transition to a summary view: e.g., “Routine Logged: 1 stunt fall, 1 tumble fall” and maybe ask “Identify stunt group or athletes?” for advanced use. But likely the user will go straight to celebrating or consoling, so the key is the data is captured without hassle.

- **Accessibility:** Not all users are super tech-savvy; ensure the interface uses plain language. Also, consider left-handed vs right-handed (maybe allow flipping the button layout).

- **Testing in Real Conditions:** Ideally, one would test the UI in a simulated live scenario (or at an actual practice) to ensure it’s intuitive. For instance, if someone tries to tap “stunt fall” three times because three stunts fell, do we allow multiple taps (increasing a counter)? Yes, we should. We might show a small number badge on the button to indicate how many have been logged. E.g., if two stunt falls occur, the user taps “Stunt Fall” twice; the button now shows “Stunt Fall (2)” to confirm count. Same for tumbling falls, etc.

- **Lockout during lulls:** Possibly disable or hide the interface until the routine starts (to avoid accidental taps while waiting). Perhaps have a “Start Routine” button, which could be pressed at the first movement or when music starts, which then brings up the live buttons and maybe a subtle timer. If the user forgets to hit start, they can still tap an error and it implicitly starts the routine clock.

- **Training/Onboarding:** Provide a very quick tutorial or labels. Maybe the first time the user opens tracking, it shows a legend: “Use these buttons to mark mistakes during the routine. Don’t worry if you miss something – you can always adjust afterward.” The interface should be so straightforward that after one use, they get it.

- **Alternate Approach – Post Routine Logging:** If real-time is too hectic for some, allow an option to log events right after the routine by answering a few quick yes/no questions: “Any stunt falls? Any pyramid falls? Any tumbling falls? Any boundary violations?” This could be a form with checkboxes or a quick tap interface. This might be more reliable for some users than real-time tapping, albeit less precise in time. Perhaps support both: live mode and recap mode. But that’s more complexity.

- **UI Example:** Imagine the live tracking screen with four big buttons:

  - **Stunt Fall** (red background)
  - **Stunt Bobble** (orange background)
  - **Tumbling Fall** (red background)
  - **OOB** (boundary) (yellow or red)

They could be in a 2x2 grid. At the top maybe a small label “Logging for [Team Name] – tap mistakes during routine.” At the bottom maybe a “Done” button (or it auto-dones when routine time ~2:30 passed or user hits a done).

The simplicity is key; the user shouldn’t have to navigate menus or type anything during that 2.5 minutes.

- **Resilience:** Ensure the app is responsive – taps must register instantly. Also consider offline usage if venue has poor signal – this should all work without internet, saving locally then syncing.

By focusing on a few **high-impact inputs** and making them idiot-proof to use, we empower users to track stats without taking their eyes off the performance for more than a split-second. This data then feeds the rich analytics we discussed, so making input easy directly improves the accuracy and completeness of the insights the app can provide.

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